

HS- 806934

DOT 4868

MVMA SIDE IMPACT TESTING

MDB-TO-CAR SIDE IMPACT TEST OF
A 26⁰ CRABBED MOVING DEFORMABLE BARRIER
TO A 1985 FORD LTD
AT 33.6 MPH

PREPARED BY:
TRANSPORTATION RESEARCH CENTER OF OHIO
ST. RT. 33 LOGAN COUNTY
EAST LIBERTY, OHIO 43319

TEST REPORT
TEST NO.: 850715
TEST DATE: JULY 15, 1985
TEST CONDITIONS: BASELINE STRUCTURE, DUMMY
SEATED 5 INCHES FROM PADDED DOOR PANEL

PREPARED FOR:
MGA RESEARCH CORPORATION
12790 MAIN ROAD
AKRON, NEW YORK 14001-0071

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Prepared By: B. L. Wade

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Project Engineer

Transportation Research Center of Ohio

Approved By: J. F. Shultis

J. F. Shultis

Manager, Impact Laboratory

Transportation Research Center of Ohio

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
acres	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons	0.9	metric ton	t
	(2000 lb)			
VOLUME				
tsp	teaspoons	5	milliliters	ml.
Tbsp	tablespoons	15	milliliters	ml.
in ³	cubic inches	16	milliliters	ml.
fl oz	fluid ounces	30	milliliters	ml.
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares	2.5	acres	acres
	(10 000 m ²)			
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	metric ton	1.1	short tons	
	(1000 kg)			
VOLUME				
ml.	milliliters	0.03	fluid ounces	fl oz
ml.	milliliters	0.06	cubic inches	in ³
L	liters	2.1	pints	pt
L	liters	1.06	quarts	qt
L	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	degrees Celsius	9/5 (then add 32)	degrees Fahrenheit	°F

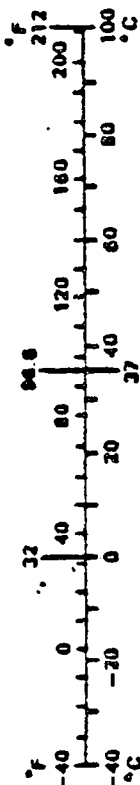


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SECTION 1.0
PURPOSE AND INTRODUCTION

PURPOSE

The main purpose of this test was to evaluate occupant responses to a padded door panel in a 90° side impact crash test.

INTRODUCTION

A stationary 1985 Ford LTD 4-door sedan was impacted on the right side by a Moving Deformable Barrier (MDB) on July 15, 1985. The test was to simulate an intersection collision with the striking vehicle travelling at 30 mph and the struck vehicle travelling at 15 mph. The orientation angle of the striking vehicle was 90° clockwise with respect to the longitudinal axis of the struck vehicle. The leading edge of contact was to be 37 inches forward of the vehicle center of gravity which is defined by accident investigation to be the midpoint of the wheelbase.

To simulate this collision, the MDB was to be towed into the stationary Ford LTD at 33.5 mph with the MDB's wheels crabbed counterclockwise to 26°. The actual test speed was 33.6 mph and the actual leading edge of contact was 36.0 inches forward of the midpoint of the Ford LTD's wheelbase.

The vehicle was a baseline model with no structural modification. The front passenger inner door panel was replaced with a padded hardboard panel. The padding was five inches thick at dummy torso height and six inches thick at the pelvis and leg height. A side impact dummy (SID) was seated in the right front passenger seat with its shoulder 5 inches from the door padding.

Section 2 contains test parameter data. Section 3 contains crash test data. Appendix A contains Data Plots. Appendix B contains Dummy Certification Data.

SECTION 2.0
TEST PARAMETER DATA

This section includes the following information:

1. General Test Vehicle Information
2. Dummy Temperature Control and Positioning Data
3. High Speed Camera Information
4. Transducer Information

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Ford Motor Company

MAKE/MODEL: Ford LTD

VIN: 1FABP39A1FG214518

BODY STYLE: 4-Door Sedan

MODEL YEAR: 1985

NHTSA NO.: DNA

COLOR: Midnight Blue

ENGINE DATA: TYPE: Inline CYLINDERS: 4 DISPLACEMENT 140 cu. in.

TRANSMISSION DATA: Automatic

DATE VEHICLE RECEIVED: 4/19/85

ODOMETER READING: 4

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	Yes
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	No	AIR CONDITIONING	No
RADIO	No	ANTI-SKID BRAKE	No
CLOCK	No	REAR WINDOW DEFROSTER	No
OTHER			

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? Yes
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? No
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

DATA FROM CERTIFICATION LABEL ON LEFT DOOR FACE OR "B" POST:

VEHICLE MANUFACTURED BY: Ford Motor Company

DATE OF MANUFACTURE: 4/85

GVWR: 4225 LBS.,

GAWR: FRONT 2103 LBS., REAR 2255 LBS.

VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 30 psi; REAR 30 psi

TIRES ON VEHICLE (MFGR. & LINE, SIZE): General Ameriway Radial P195/75R14

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 3

IS SPARE TIRE "SPACE SAVER"? Yes

IS SPARE TIRE STANDARD EQUIPMENT? Yes

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS):

RIGHT FRONT	805	LBS.	RIGHT REAR	673	LBS.
LEFT FRONT	796	LBS.	LEFT REAR	672	LBS.
TOTAL FRONT WEIGHT	1601		LBS.	(54.4 % OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1345		LBS.	(45.6 % OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	2946		LBS.		

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 26 3/8	;LF 26 5/16	;RR 23 13/16	;LR 23 7/8
PRE-TEST ATTITUDE:	RF 26 1/4	;LF 26	;RR 23 1/4	;LR 23 1/4
POST-TEST ATTITUDE:	RF 25 7/8	;LF 25 3/4	;RR 22 1/4	;LR 22 1/8

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 95 LBS. CARGO:

RIGHT FRONT	840	LBS.	RIGHT REAR	827	LBS.
LEFT FRONT	780	LBS.	LEFT REAR	768	LBS.
TOTAL FRONT WEIGHT	1595		LBS.	(49.6 % OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1620		LBS.	(50.4 % OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	3215		LBS.		

WEIGHT OF BALLAST SECURED IN VEHICLE TRUNK AREA: 0 LBS.

TEST FLUID DATA

TEST FLUID TYPE: RED STODDARD SOLVENT 2; SPEC. GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USEABLE" CAPACITY*: NA GALLONS ACTUAL

TEST VOLUME: 14.9 GALLONS

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 16.0 GALLONS

DETAILS OF FUEL SYSTEM: Mechanical Fuel Pump

ELECTRIC FUEL PUMP: No

FUEL INJECTION: No

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING? DNA

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL ON DOOR, POST, GLOVEBOX, ETC.

VEHICLE LOAD (UP TO CAPACITY): FRONT 30 psi; REAR 30 psi

RECOMMENDED TIRE SIZE: P195/75R14

LOAD RANGE X B, C,

VEHICLE CAPACITY:

TYPES OF SEATS:

Front - Split Bench

Rear - Bench

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 3 FRONT

3 REAR

CARGO LOAD 100 LBS.

6 TOTAL

TOTAL 1000 LBS.

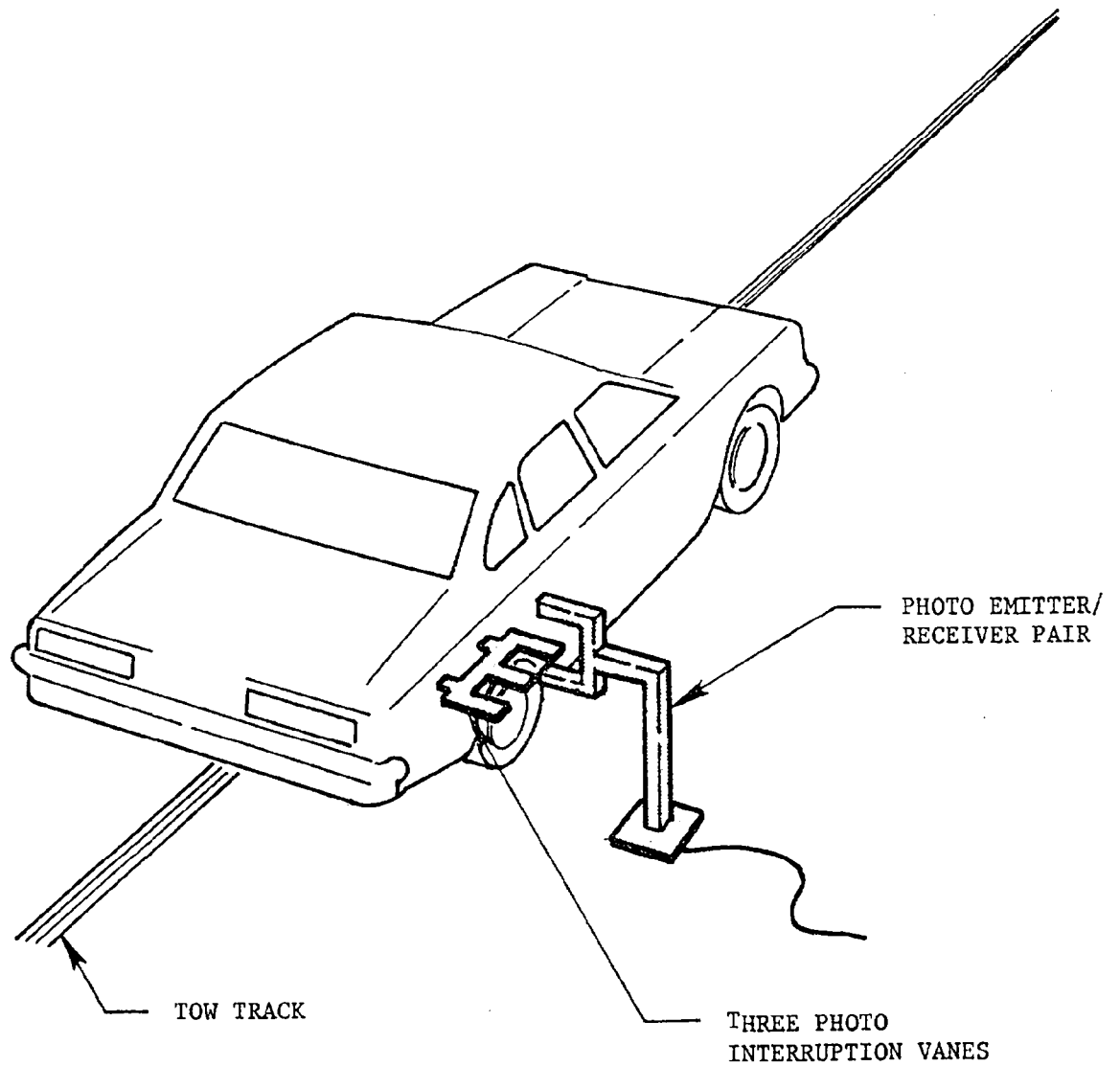
*WITH ENTIRE FUEL SYSTEM FILLED WITH FUEL TANK THROUGH CARBURETOR BOWL.

VEHICLE TEST WEIGHT CALCULATION

Test Weight = Unloaded Delivered Weight +
 Number of Dummies X 174 lbs. +
 Cargo Weight
 = 2946 + 1 X 174 + 100 lbs.
 = 3220 lbs.

To achieve test weight, the exhaust system, battery, alternator, air cleaner and power steering pump were removed and 14.9 gallons of Stoddard Solvent were added in the fuel tank. The weight of the test vehicle was measured by placing each wheel on a Force Plate manufactured by K.J. Law Engineers, Inc., Detroit, Michigan.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears emitter/receiver two inches before impact.

The vanes have one foot spacing.

DUMMY TEMPERATURE CONTROL AND POSITIONING

The vehicle was kept inside the temperature controlled crash test building until approximately 2 hours prior to the test. Temperature inside the vehicle and ambient temperature at the crash area were recorded. Dummy temperature while outside the crash test building was maintained portably until approximately 1 minute prior to the test.

The following table summarizes the steps taken to position the instrumented, calibrated dummies in the test vehicle.

SIDE IMPACT DUMMY SEATING PROCEDURE

The following is an outline of the Side Impact Dummy Seating Procedure which is currently being developed.

1. The seat is placed in the midpoint of the fore to aft adjustment.
2. The H-point location of the NHTSA Side Impact Dummy (SID) is located by using the SAE three-dimensional H-point machine (SAE J826 APR80 - 50TH Percentile Male Configuration). The H-point machine is positioned in the right front outboard designated seating position such that the midsagittal plane is vertical and longitudinal. The H-point is located and documented using Sections 4 through 6 of SAE Standard J826 APR80.
3. The H-point machine is removed and the SID is positioned in the right front passenger seat such that its right shoulder is either five inches from or against the hardboard or padded inner door panel. The knees are initially set 11 1/2 inches apart, measured between the outer surfaces of the knee pivot bolt heads, if possible. The H-point is then positioned to within 1/2 inch of the coordinates of the H-point machine H-point location found in Step 2 by applying force in the appropriate direction to the dummy's lower torso. If the dummy's upper torso does not rest against the seatback, position the torso without moving the H-point so the upper torso does rest against the seatback. The dummy's feet are then positioned such that the heels rest on the floorpan and the feet are on the toeboard. If the dummy's feet will not reach the toeboard, the feet are positioned such that the feet are at right angles to the lower legs. If wheelhouse projections interfere with the above positioning of the feet, the heel is placed on the floorpan with the foot perpendicular to the lower leg by twisting the foot about the ankle.
4. Prior to the crash test the dummy's longitudinal and lateral head locations are rechecked. The dummy is then visually checked.

DUMMY IN-VEHICLE POSITION RECORDING SHEET

MFR./MAKE/MODEL: Ford LTD

FRONT SEAT TYPE: BENCH
 BUCKET
 X SPLIT BENCH

ADJUSTER TYPE: X MANUAL
 POWER

BUCKET SEAT BACK TYPE: X FIXED
 ADJUSTABLE

TECHNICIANS:
 1. D. Carpenter

POSITIONING DATE: 7/15/85

2. B. Fishbaugh

AMBIENT TEMP: 78 °F TIME: 10:00

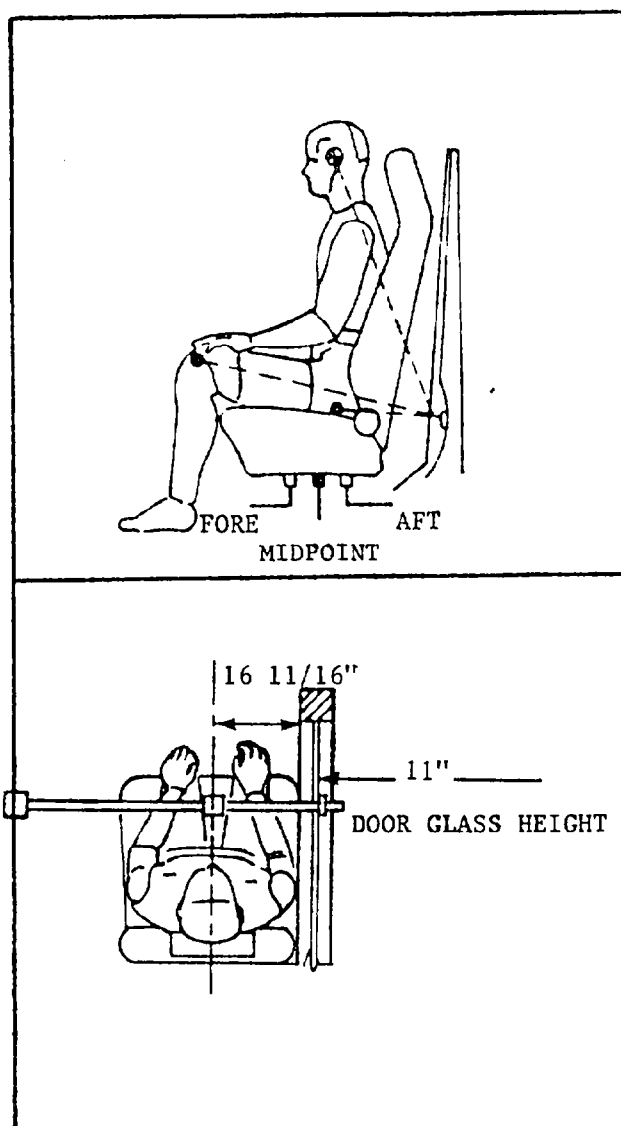
3.

FRONT PASSENGER DUMMY # 119

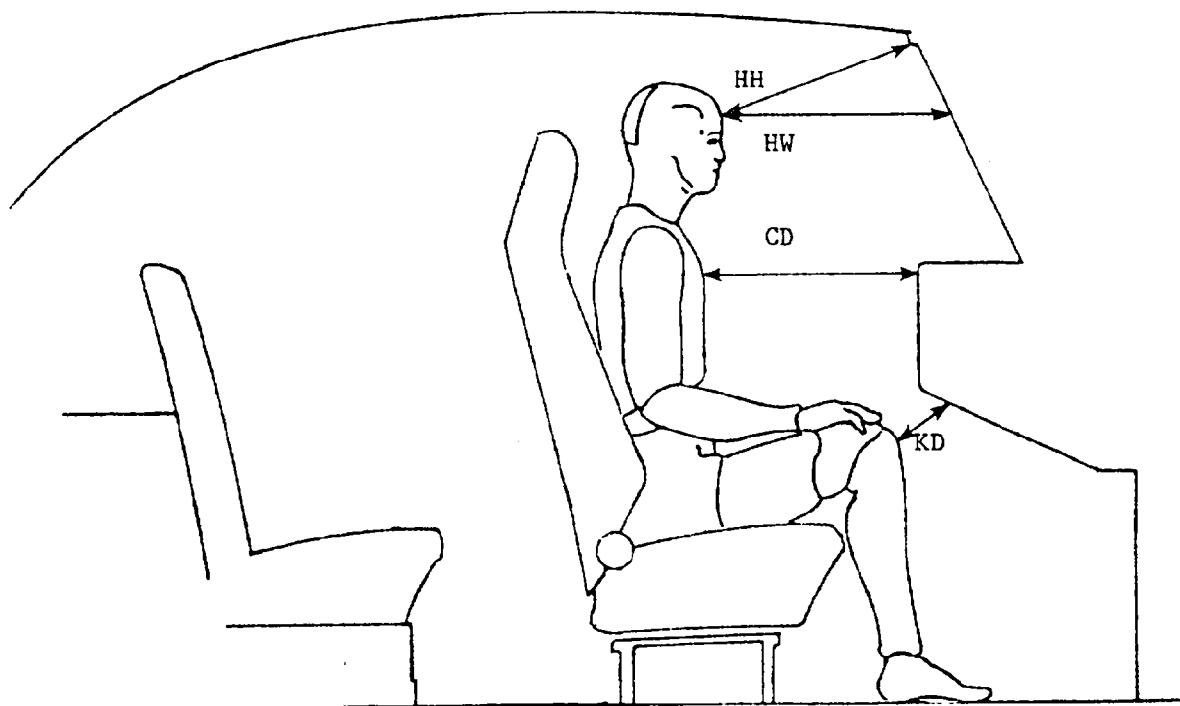
20 1/2" HEAD
2 TARGET*

24 3/4" KNEE
91 JOINT

APPROX.
115" "H"
12 1/4 POINT



*All passenger dummy dimensions referenced to top of front door striker bolt and all angles referenced to vertical.



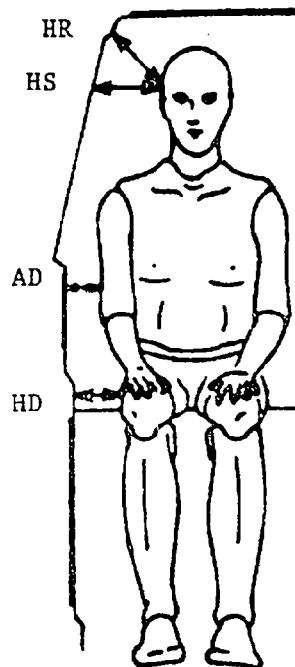
PASSENGER

119

HH	12 1/2
HW	17 1/2
CD	18 13/16
KDL	4 3/4
KDR	6 1/8

ALL MEASUREMENTS IN INCHES

DUMMY LONGITUDINAL CLEARANCE DIMENSION



PASSENGER
119

HR	11 11/16
HS	14 15/16
AD	5
HD	5 7/8

ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	-6'11 1/2"	-25'10 1/2"	+ 3'3"
2	-23'4 3/4"	+41'6 1/2"	+ 3'1"
5	0	0	+40'
6	+1'	0	+40'

Origin of Coordinate System is Point of Impact

+X = Forward with Respect to Striking Vehicle's Velocity Vector
+Y = Rightward with Respect to Striking Vehicle's Velocity Vector
+Z = Upward with Respect to Striking Vehicle's Velocity Vector

CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1		Beaulieu	12-120	24	Documentary
2	Panning	Kodak	16	24	Real Time
3	MDB Wide	Photosonic 1B	13	988	View Impact
4	Overhead Tight	Photosonic 1B	25	963	View Impact
5	Overhead Wide	Photosonic 1B	8	900	Vehicle Crush
6	Right	Photosonic 1B	25	1002	Vehicle Crush
7	Left	Photosonic 1B	13	1075	Vehicle Crush
8	Onboard Windshield	Photosonic 1B	8	997	Dummy Kinematics
9	Onboard Roof	Photosonic 1B	8	983	Dummy Kinematics
10	Onboard Door	Photosonic 1B	8	1000	Dummy Kinematics

TRANSDUCER INFORMATION

PARAMETER BEING MEASURED	LOCATION	TYPE OF TRANSDUCER	MFGR	MODEL NUMBER	SERIAL NUMBER
HEDXG2	HEAD CENTER OF GRAVITY	ACCEL.	ENDEVCO	2264	AY95
HEDYG2	HEAD CENTER OF GRAVITY	ACCEL.	ENDEVCO	2264	BA26
HEDZG2	HEAD CENTER OF GRAVITY	ACCEL.	ENDEVCO	2264	BA30
T01XG2	UPPER SPINE	ACCEL.	ENDEVCO	2264	AR93
T01YG2	UPPER SPINE	ACCEL.	ENDEVCO	2264	AN61
T01YGB	UPPER SPINE	ACCEL.	ENDEVCO	2264	AZ77
T01ZG2	UPPER SPINE	ACCEL.	ENDEVCO	2264	AN37
T12XG2	LOWER SPINE	ACCEL.	ENDEVCO	2264	AZ55
T12YG2	LOWER SPINE	ACCEL.	ENDEVCO	2264	BA64
T12YGB	LOWER SPINE	ACCEL.	ENDEVCO	2264	AZ74
T12ZG2	LOWER SPINE	ACCEL.	ENDEVCO	2264	AR86
RURYG2	RIGHT UPPER RIB	ACCEL.	ENDEVCO	2264	AR82
RURYGB	RIGHT UPPER RIB	ACCEL.	ENDEVCO	2264	AZ24
RLRYG2	RIGHT LOWER RIB	ACCEL.	ENDEVCO	2264	AN60
RLRYGB	RIGHT LOWER RIB	ACCEL.	ENDEVCO	2264	AY78
PEVXG2	PELVIS	ACCEL.	ENDEVCO	2264	AR78
PEVYG2	PELVIS	ACCEL.	ENDEVCO	2264	AN01
PEVZG2	PELVIS	ACCEL.	ENDEVCO	2264	AJ35
RRTYD2	RIGHT RIB TO SPINE DISPLACEMENT	LINEAR POT.	BOURNS	5184	4081-191
RFDYG1	RIGHT FRONT DOOR-POSITION 1	ACCEL.	ENDEVCO	2264	AJ42
RFDYG2	RIGHT FRONT DOOR-POSITION 2	ACCEL.	ENDEVCO	2264	AS36
RFDYG3	RIGHT FRONT DOOR-POSITION 3	ACCEL.	ENDEVCO	2264	BC29
RFDYG4	RIGHT FRONT DOOR-POSITION 4	ACCEL.	ENDEVCO	7264	AN86
LFSXG	LEFT FRONT SILL	ACCEL.	B & H*	4-202-0001	18840
LFSYG	LEFT FRONT SILL	ACCEL.	B & H	4-202-0001	18236
LFSZG	LEFT FRONT SILL	ACCEL.	B & H	4-202-0001	18837
BCGXG	BARRIER CENTER OF GRAVITY	ACCEL.	B & H	4-202-0001	18851
BCGYG	BARRIER CENTER OF GRAVITY	ACCEL.	B & H	4-202-0001	18859
BCGZG	BARRIER CENTER OF GRAVITY	ACCEL.	B & H	4-202-0001	18847
BRCXG	BARRIER REAR CROSS MEMBER	ACCEL.	B & H	4-202-0001	19002
BRCYG	BARRIER REAR CROSS MEMBER	ACCEL.	B & H	4-202-0001	18237

*Bell & Howell

SECTION 3.0
CRASH TEST DATA

The following pages are included in this section:

1. Test conditions
2. Dummy accelerometer data summary
3. Dummy contact points and kinematic summary
4. Vehicle accelerometer locations and data summary
5. Vehicle static crush table and profiles
6. Deformable moving barrier accelerometer locations and data summary
7. Test anomalies

TEST CONDITIONS

TEST NUMBER: 850715

DATE OF TEST: July 15, 1985

TIME OF TEST: 13:21

WIND VELOCITY: 3-6 mph 243°SW

HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA: 78° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 74° F

DUMMY TEMPERATURE: 74° F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	3215	3220
MDB TEST WEIGHT (LBS.)	2991	2992
MDB VELOCITY (MPH)*	33.6	33.5
IMPACT POINT (INCHES)**	36.0	37.0

DUMMIES

	<u>DRIVER</u>	<u>MIDDLE PASSENGER</u>	<u>RT. FRONT PASSENGER</u>	<u>LEFT REAR PASSENGER</u>	<u>RT. REAR PASSENGER</u>
TYPE:			SID		
SERIAL NO.:			119		
INSTRUMENTATION:					
HEAD ACCEL.:			3		
CHEST ACCEL.:			12		
FEMUR L.C.'S:			0		
OTHER:			3 Pelvis		
			1 Rib Disp.		

RESTRAINT SYSTEM: Dummy was unrestrained

* As measured over final one foot of travel.

** As measured forward of the midpoint of the test vehicle's wheelbase

SIDE IMPACT DUMMY DATA SUMMARY

	PASSENGER DUMMY			
	POSITIVE		NEGATIVE	
	DIRECTION*		DIRECTION**	
	MAX	TIME	MAX	TIME
	(g)	(msec)	(g)	(msec)
HEAD ACCELERATION				
LONGITUDINAL	8.04	186.63	33.38	91.13
LATERAL	10.81	194.63	21.09	56.50
VERTICAL	42.45	66.63	4.67	334.25
RESULTANT	44.61 @ 67.00			
HIC	240.91 from 48.38 to 118.25			
DELTA V (MPH)	-16.4 @ 149.13			
CHEST ACCELERATION				
UPPER SPINE				
LONGITUDINAL	16.35	55.00	7.25	71.25
LATERAL (P)****	13.85	63.75	51.97	39.38
LATERAL (R)****	15.29	63.13	51.04	39.38
VERTICAL	5.63	48.13	8.55	70.63
RESULTANT (P)	53.39 @ 39.38			
RESULTANT (R)	52.48 @ 39.38			
DELTA V (MPH)***	-22.3 @ 61.75 (P)			
	-21.8 @ 61.63 (R)			
LOWER SPINE				
LONGITUDINAL	14.74	96.88	22.63	38.13
LATERAL (P)	8.93	63.13	63.20	46.88
LATERAL (R)	11.57	63.13	59.96	46.25
VERTICAL	4.89	93.13	8.73	62.50
RESULTANT (P)	65.35 @ 38.75			
RESULTANT (R)	64.06 @ 38.13			
DELTA V (MPH)	-25.8 @ 61.75 (P)			
	-23.9 @ 60.75 (R)			
RIGHT UPPER RIB				
LATERAL (P)	8.90	78.75	54.96	32.50
LATERAL (R)	8.98	193.13	58.43	32.50
DELTA V (MPH)	-20.8 @ 64.25 (P)			
	-20.9 @ 64.25 (R)			
RIGHT LOWER RIB				
LATERAL (P)	14.46	66.25	43.72	51.25
LATERAL (R)	16.71	193.13	60.04	187.50
DELTA V (MPH)	-21.2 @ 65.13 (P)			
	-21.8 @ 65.13 (R)			
PELVIS ACCELERATION				
LONGITUDINAL	11.55	89.88	28.47	45.50
LATERAL	20.34	88.38	62.23	51.75
VERTICAL	8.99	38.88	12.99	64.63
RESULTANT	64.04 @ 51.75			
DELTA V (MPH)	-25.5 @ 69.63			

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	<u>PASSENGER DUMMY</u>			
	<u>POSITIVE</u>		<u>NEGATIVE</u>	
	<u>DIRECTION*</u>		<u>DIRECTION**</u>	
	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>
	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>
RIB DEFLECTION †	0.05	187.38	1.90	62.00

* LONGITUDINAL: FORWARD
LATERAL: RIGHTWARD
VERTICAL: DOWNWARD

**LONGITUDINAL: REARWARD
LATERAL: LEFTWARD
VERTICAL: UPWARD

*** For dummy channels, Delta V is the velocity change at the approximate time of separation from the contact area.

**** (P) = Primary Sensor, (R) = Redundant Sensor

† Compression: Negative

VISIBLE DUMMY CONTACT POINTS:

	DRIVER DNA	PASSENGER
Head	_____	Top of door padding
Chest	_____	Door padding
Abdomen	_____	Door padding
Left Knee	_____	Right knee
Right Knee	_____	Door padding

DOOR OPENING:

	LEFT	RIGHT
Front	Normal	Tools required
Rear	Normal	Tools required

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	No	No
Rear	No	No

GLAZING DAMAGE:

All right door glass was shattered

Front windshield was cracked

OTHER NOTABLE IMPACT EFFECTS:

DUMMY KINEMATIC SUMMARY

Upon impact, the dummy's right shoulder and right leg contacted the door padding. The dummy's head rotated down toward the right door window sill and struck the top of the door padding. The dummy then rebounded from the door padding and came to rest seated in the right front passenger's seat, leaning to the dummy's left.

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

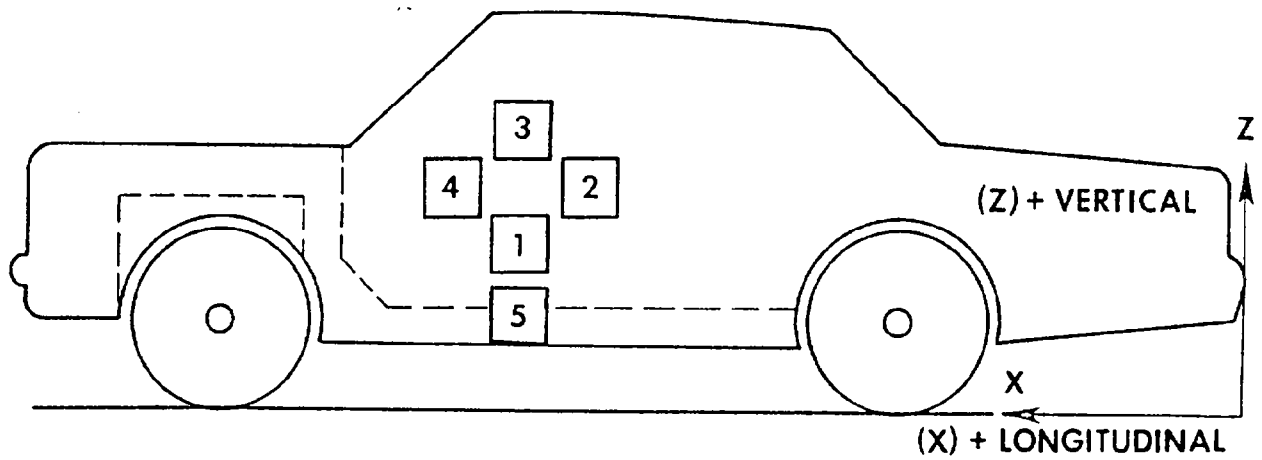
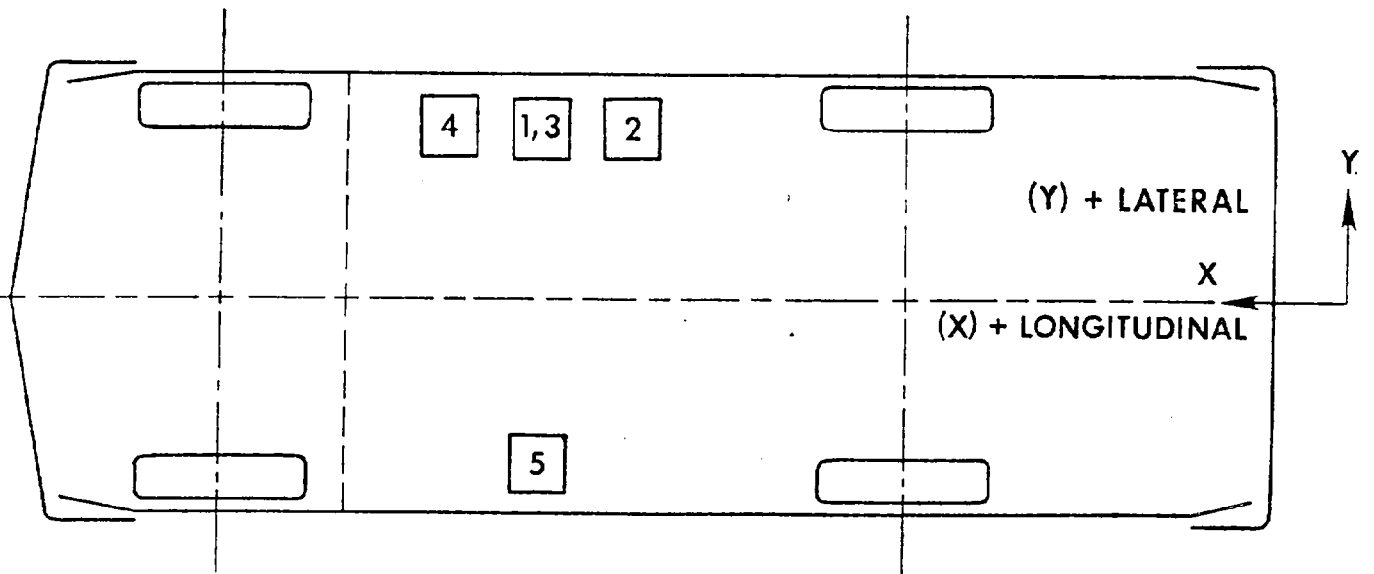
NO.	LOCATION	X*	Y*	Z*	POSITIVE** DIRECTION		NEGATIVE*** DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	RIGHT FRONT DOOR CENTERLINE (LATERAL) $\Delta V = -26.7$ mph @ 23.13 msec	113.0	28.6	23.5	117.45	29.50	188.94	14.00
2	MIDREAR OF RIGHT FRONT DOOR (LATERAL) $\Delta V = -22.1$ mph @ 23.50 msec	102.0	29.1	25.3	45.46	29.25	67.95	10.50
3	UPPER RIGHT FRONT DOOR CENTERLINE (LATERAL) $\Delta V = -22.4$ mph @ 22.88 msec	113.3	28.7	30.5	85.85	30.38	80.55	22.75
4	MIDFRONT OF RIGHT FRONT DOOR (LATERAL) $\Delta V = -19.7$ mph @ 14.25 msec	122.5	28.9	23.5	31.35	50.38	125.85	11.00
5	LEFT SILL AT FRONT SEAT (LONGITUDINAL) (LATERAL) $\Delta V = -14.4$ mph @ 130.50 msec (VERTICAL) (RESULTANT)	120.1	-26.4	12.5	1.89 1.99 3.33	59.63 96.38 55.00 25.59 @ 39.88	6.29 24.97 7.34	23.25 40.00 19.38

* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right),
Z - Ground Level (+ Up)

LONGITUDINAL: FORWARD *LONGITUDINAL: REARWARD
LATERAL: RIGHTWARD LATERAL: LEFTWARD
VERTICAL: DOWNWARD VERTICAL: UPWARD

All measurements of accelerometer locations in inches.

VEHICLE ACCELEROMETER PLACEMENT



VEHICLE EXTERIOR PROFILES AND STATIC CRUSH

ZERO DISTANCE AT PROJECTED IMPACT POINT*

LOCATION	HEIGHT (in)	78	72	66	60	54	48	42	36	30	24	18	12	6	0	6
		PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)														
Axle Height	12.0	X	17.8	17.6	17.5	17.4	17.4	17.4	17.1	17.3	17.2	17.4	17.4	17.4	17.6	X
H-Point	22.2		12.9	13.6	13.6	13.5	13.6	13.8	13.9	13.9	14.1	14.2	14.2	14.2	14.2	X
Window Sill	36.0		16.1	16.1	16.1	16.1	16.1	16.2	16.2	16.4	16.4	16.5	16.6	16.8	17.0	
Window Top	53.6		25.1	24.6	24.3	24.2	24.2	24.4	24.6	24.8	X	X	X	X	X	X

POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)

Axle Height	12.0	X	NA	23.8	24.3	25.9	27.2	28.1	28.8	29.4	29.9	30.5	31.1	27.2	23.2	X
H-Point	22.2		19.4	33.0	34.9	35.5	35.8	33.2	32.6	32.0	31.8	31.1	30.5	29.5	27.0	23.9
Window Sill	36.0		32.4	31.4	28.4	32.0	31.5	29.6	29.1	28.8	28.4	28.0	26.4	25.1	21.8	20.8
Window Top	53.6		28.4	28.2	28.2	28.5	29.0	29.9	29.8	29.8	29.9	X	X	X	X	X

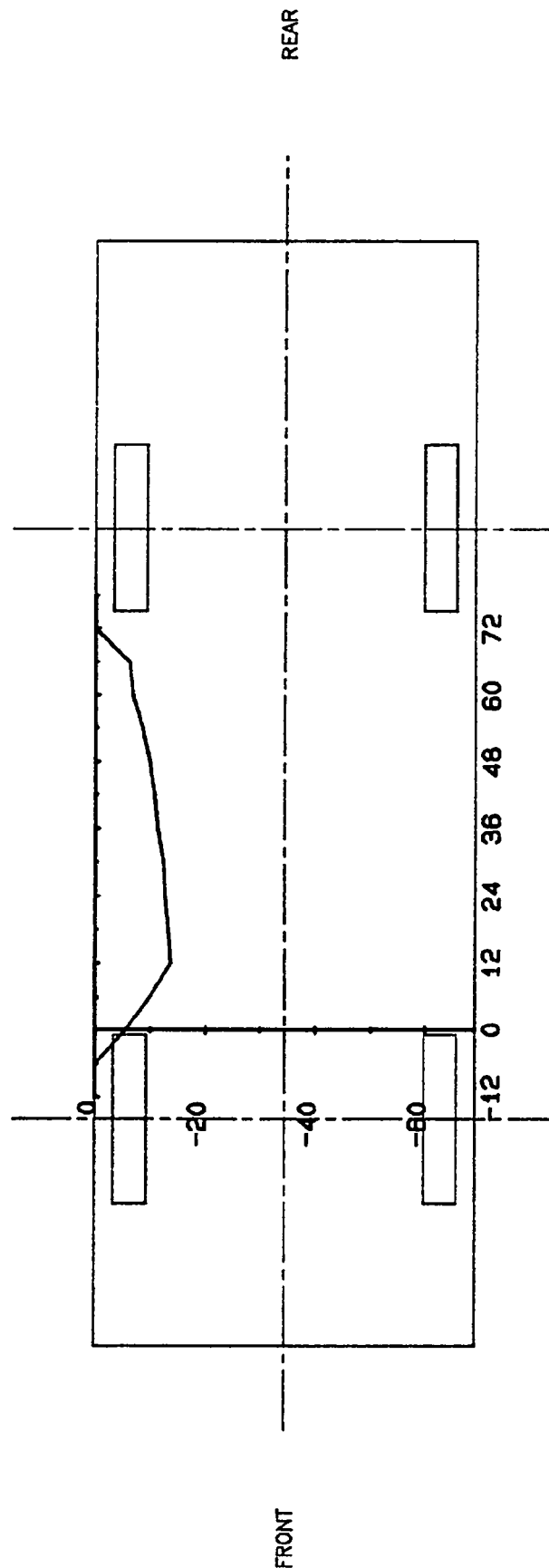
STATIC CRUSH (IN)

Axle Height	12.0	X	NA	6.2	6.8	8.5	9.8	10.7	11.4	12.3	12.6	13.3	13.7	9.8	5.6	X
H-Point	22.2		6.5	19.4	21.3	21.9	22.3	19.6	19.0	18.2	17.9	17.2	16.4	15.3	12.8	9.7
Window Sill	36.0		16.3	15.3	12.3	15.9	15.4	13.5	13.0	12.6	12.2	11.6	10.0	8.6	5.2	4.4
Window Top	53.6		3.3	3.6	3.9	4.3	4.8	5.6	5.4	5.2	5.1	X	X	X	X	X

* Projected impact point is 37 inches forward of passenger side wheelbase midpoint. Column readings are rear to front from left to right.

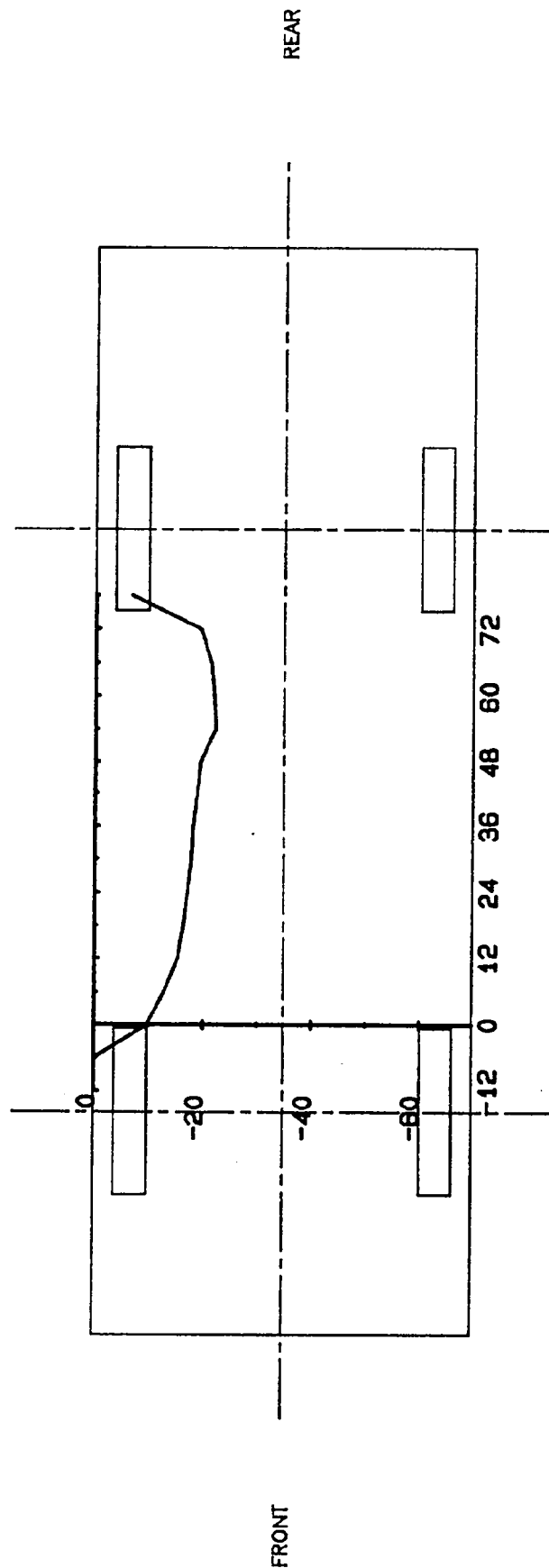
** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

VEHICLE EXTERIOR STATIC CRUSH PROFILE



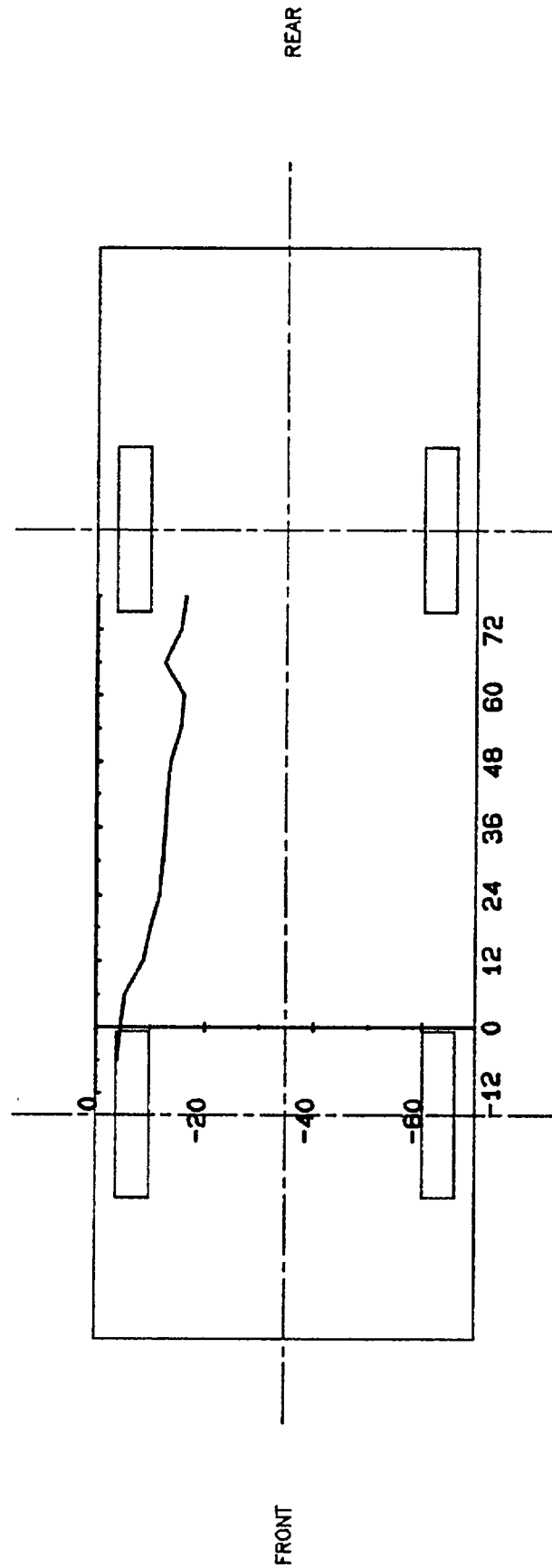
PROFILE LEVEL EQUALS AXLE HEIGHT WHICH IS 12.0" ABOVE GROUND LEVEL
 (0,0) EQUALS PROJECTED IMPACT POINT
 SCALE FACTOR EQUALS 0.033

VEHICLE EXTERIOR STATIC CRUSH PROFILE



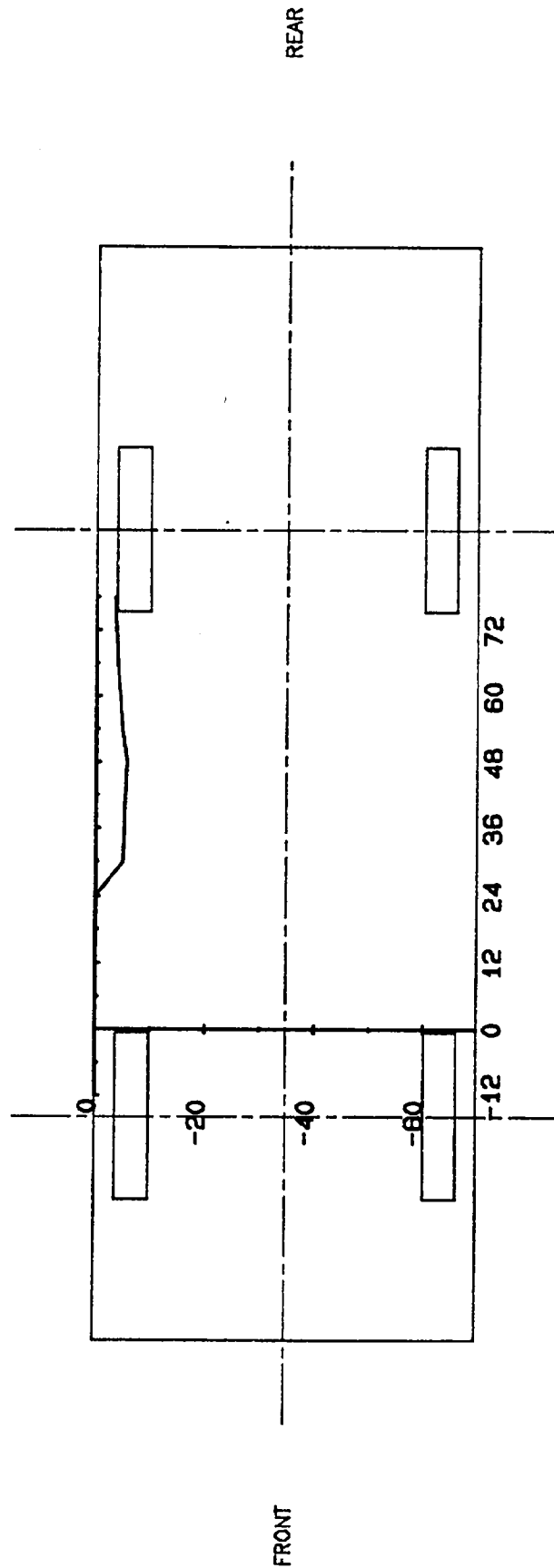
PROFILE LEVEL EQUALS H-POINT HEIGHT WHICH IS 22.2" ABOVE GROUND LEVEL
 (0,0) EQUALS PROJECTED IMPACT POINT
 SCALE FACTOR EQUALS 0.033

VEHICLE EXTERIOR STATIC CRUSH PROFILE



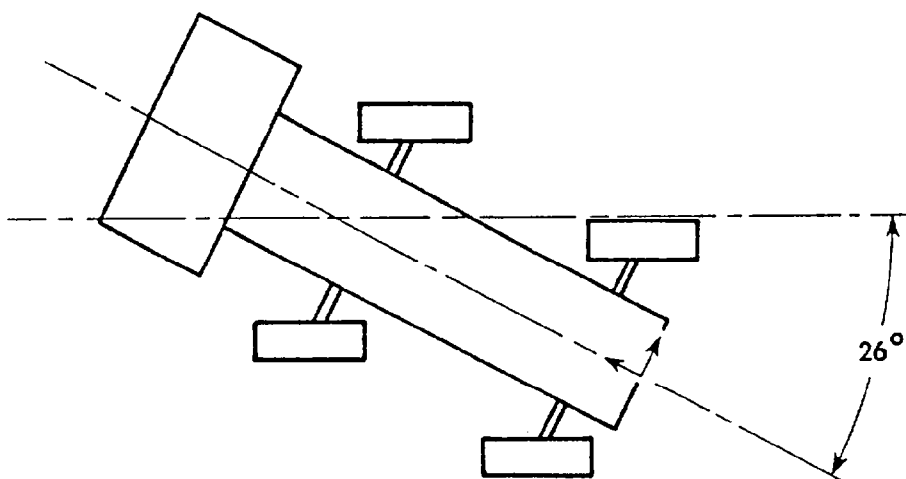
PROFILE LEVEL EQUALS WINDOW SILL HEIGHT WHICH IS 12.0 " ABOVE GROUND LEVEL
 (0,0) EQUALS PROJECTED IMPACT POINT
 SCALE FACTOR EQUALS 0.033

VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW TOP HEIGHT WHICH IS 53.6" ABOVE GROUND LEVEL
 (0,0) EQUALS PROJECTED IMPACT POINT
 SCALE FACTOR EQUALS 0.033

MOVING BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY



NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	CENTER OF GRAVITY	73.0	0.9	11.9				
	(LONGITUDINAL) $\Delta V = -20.1$ mph @ 165.50 msec				---	---	13.39	27.50
	(LATERAL) $\Delta V = 6.2$ mph @ 165.50 msec				9.61	30.25	1.18	251.38
	(VERTICAL)				8.83	47.25	6.75	40.38
	(RESULTANT)					15.57 @ 29.25		
2	REAR FRAME MEMBER	18.5	-19.2	11.9				
	(LONGITUDINAL) $\Delta V = -14.7$ mph @ 165.50 msec				1.51	239.88	9.94	54.63
	(LATERAL) $\Delta V = 1.3$ mph @ 165.50 msec				4.76	116.13	6.56	38.38

* Reference: X - Rear Most Point of Frame (+ To Forward), Y - Barrier Centerline (+ To Right), Z - Ground Level (+ To Up)

LONGITUDINAL: FORWARD *LONGITUDINAL: REARWARD
 LATERAL: RIGHTWARD LATERAL: LEFTWARD
 VERTICAL: DOWNWARD VERTICAL: UPWARD

All measurements of accelerometer locations in inches.

*There were no positive values in the time interval of interest.

APPENDIX A

DATA PLOTS

Data plots generated from the crash test data are presented on the following pages. All data are recorded on magnetic tape for inclusion in the NHTSA crash test data base system. All data were filtered according to SAE J211, except that dummy thorax data were filtered using the HSRI filter.

TRC 850715 PLOT DATE 23-JUL-85 14:42:25

NVNA SIDE IMPACT TESTING

8519600000

HEDX62

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -33.38 91.13, 8.04 186.63

200.00

150.00

100.00

50.00

0.00

-50.00

-100.00

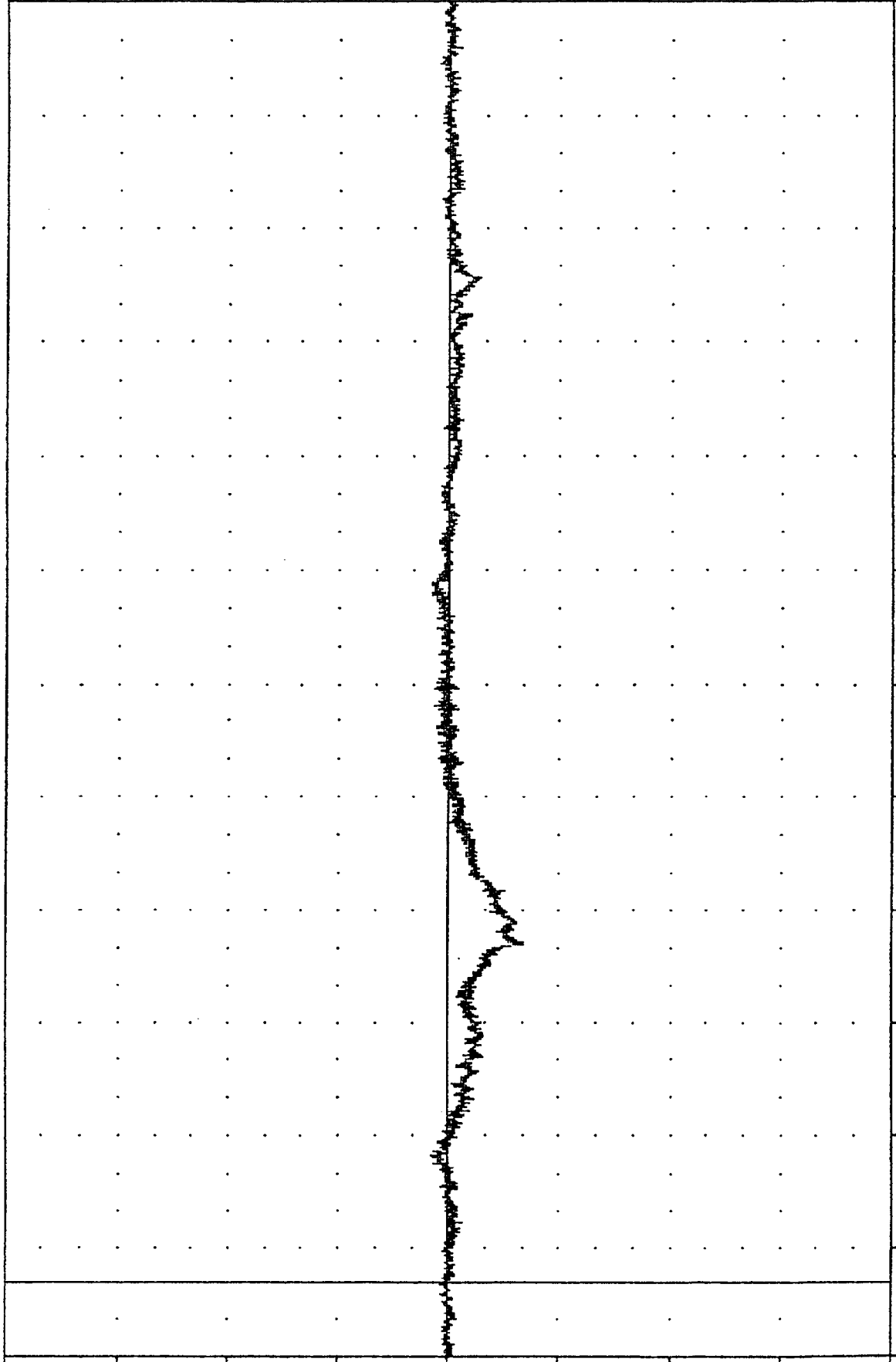
-150.00

-200.00

A-2

(G)

ACCELERATION

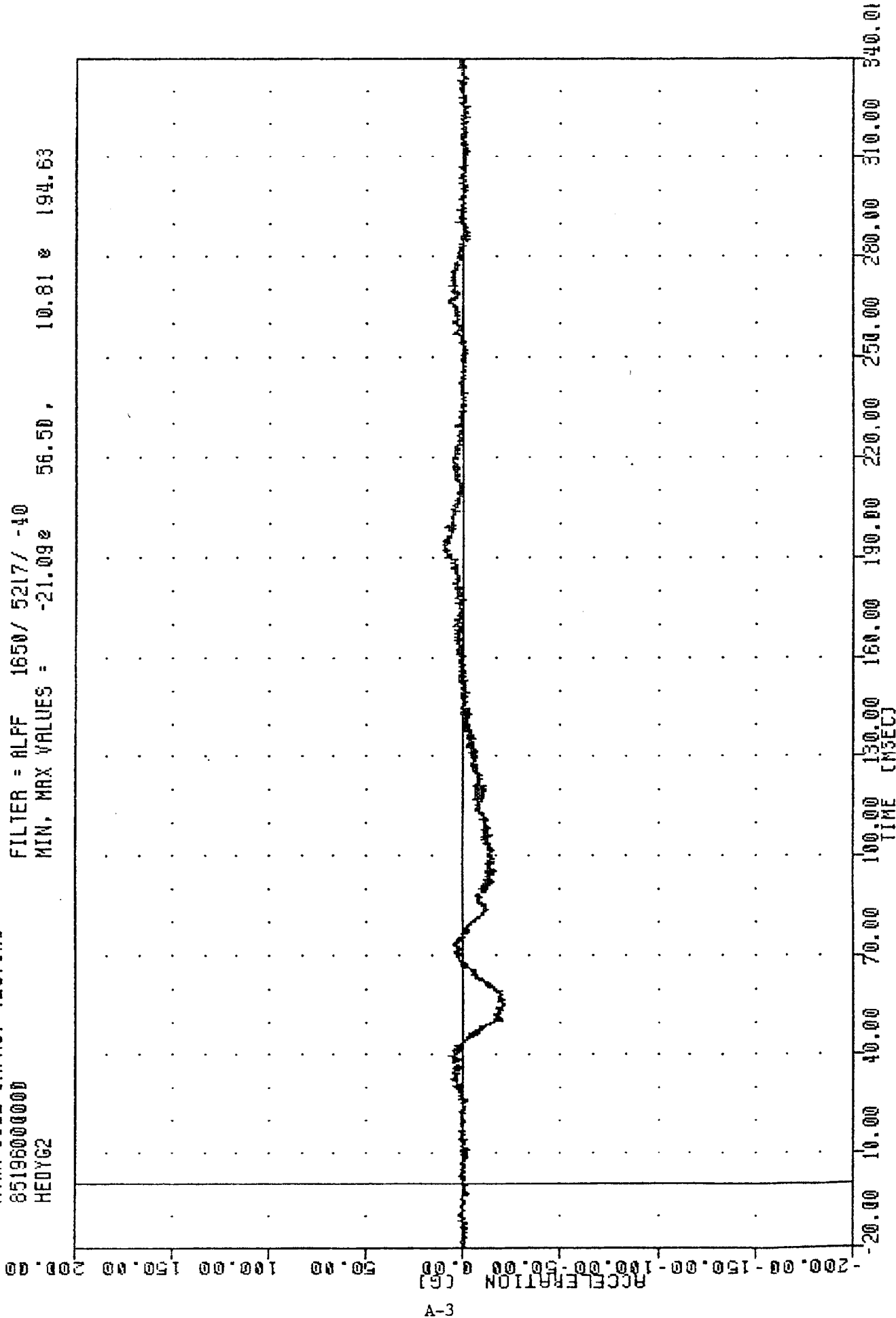


TIME (MSEC) 340.00 310.00 280.00 250.00 220.00 190.00 160.00 130.00 100.00 70.00 40.00 10.00 -20.00

TRC , 850715
 MVNA SIDE IMPACT TESTING
 85196000000
 HEDYG2

PLOT DATE 23-JUL-85 14:42:25

FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -21.09e 56.50, 10.81 e 194.63



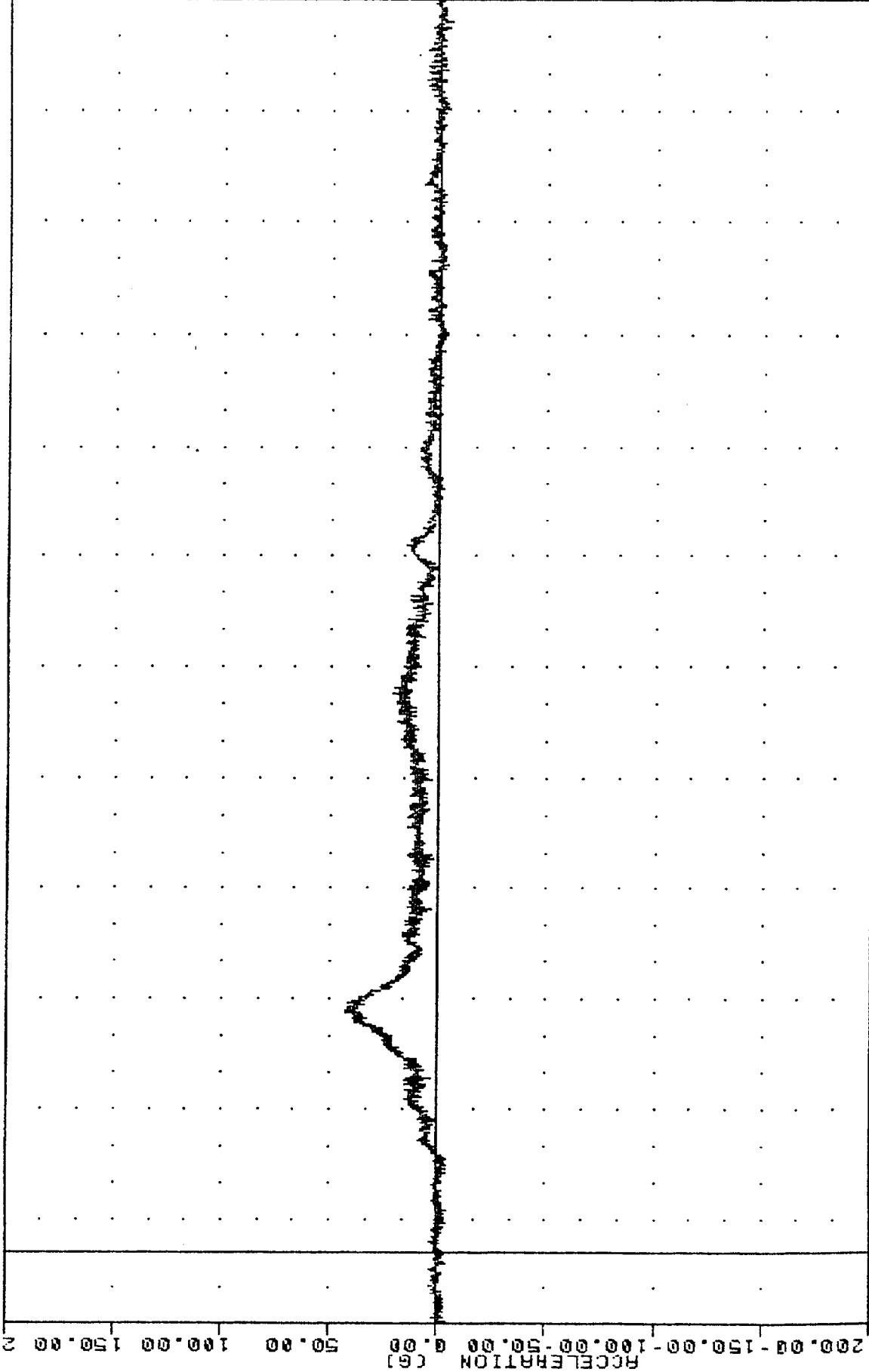
MVNA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER HEAD ACCELERATION Y AXIS

TAC
 MVMA SIDE IMPACT TESTING
 851960000000
 HEDZ62

PLOT DATE 23-JUL-85 14:42:25

FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -4.67 e 334.25, 42.45 e 66.63

200.00



A-4

200.00 150.00 100.00 50.00 0.00 -50.00 -100.00 -150.00 -200.00
 TIME (MSEC)
 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

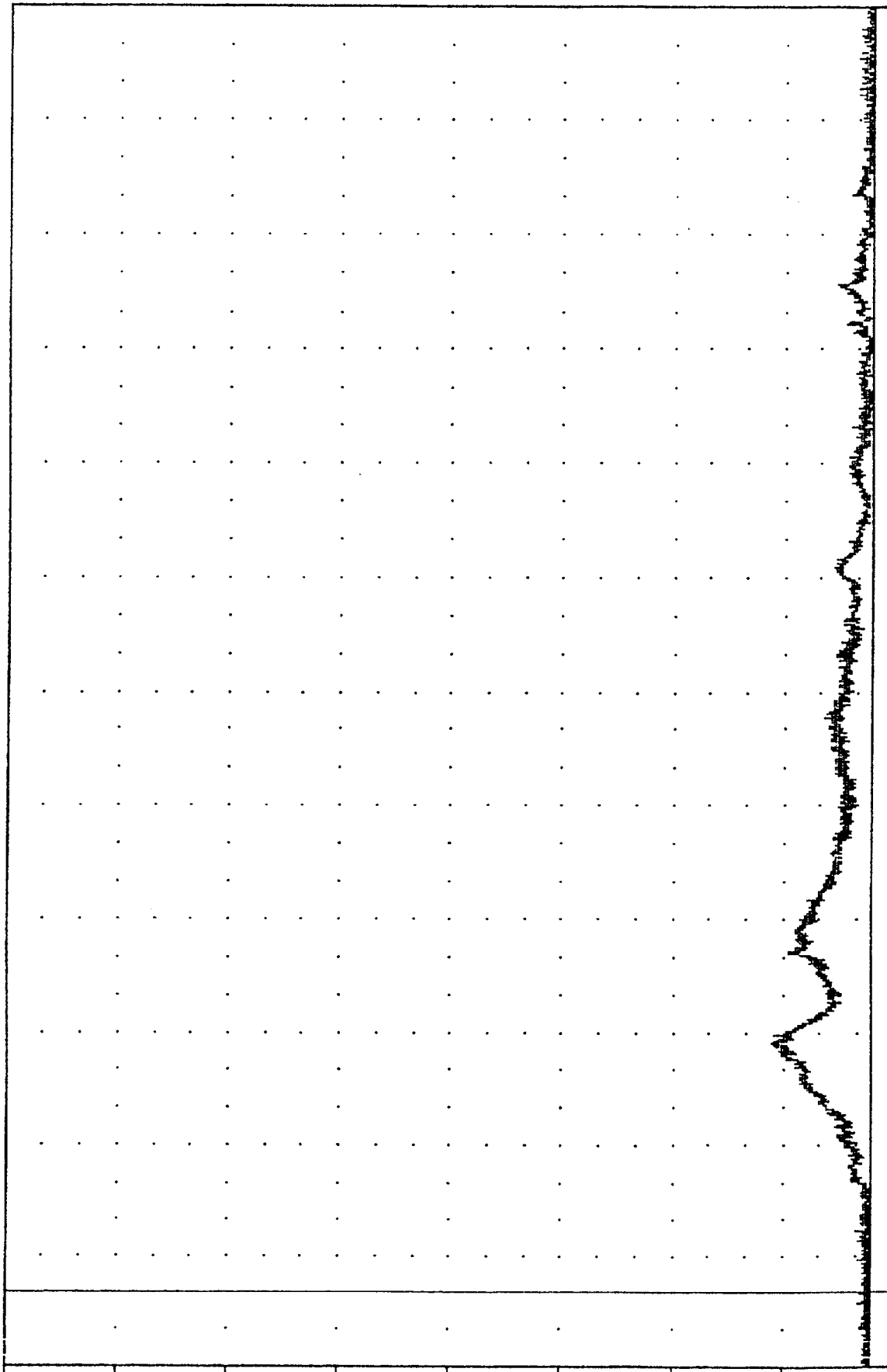
MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER HEAD ACCELERATION Z AXIS

TRC
 NVMA SIDE IMPACT TESTING
 85196000000
 HEDRG2

PLOT DATE 23-JUL-85 14:42:25

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = 0.10e 18.00, 44.61 e 67.00

ACCELERATION (G)
 10.00
 40.00
 90.00
 140.00
 190.00
 240.00
 290.00
 340.00
 390.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

NVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER HEAD RESULTANT ACCELERATION

TRC , 850715
PLOT DATE 23-JUL-85 15:04:44

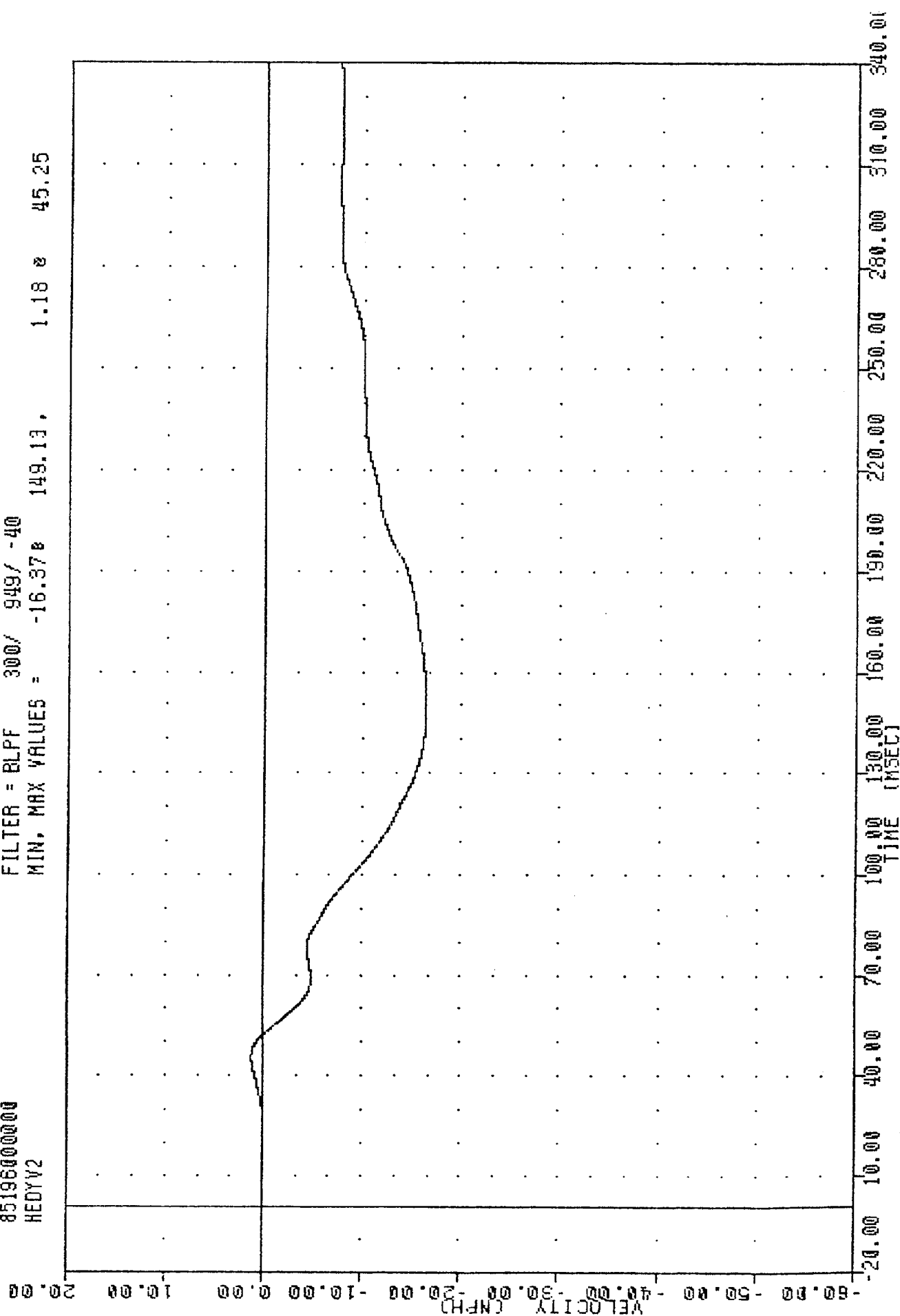
NVMA SIDE IMPACT TESTING

851980000000

HEDYV2

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -16.37 149.13, 1.18 45.25



NVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING

HEAD VELOCITY Y AXIS

TRC
 , 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 101X62

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -7.25% 71.25, 16.35 & 55.00

200.00

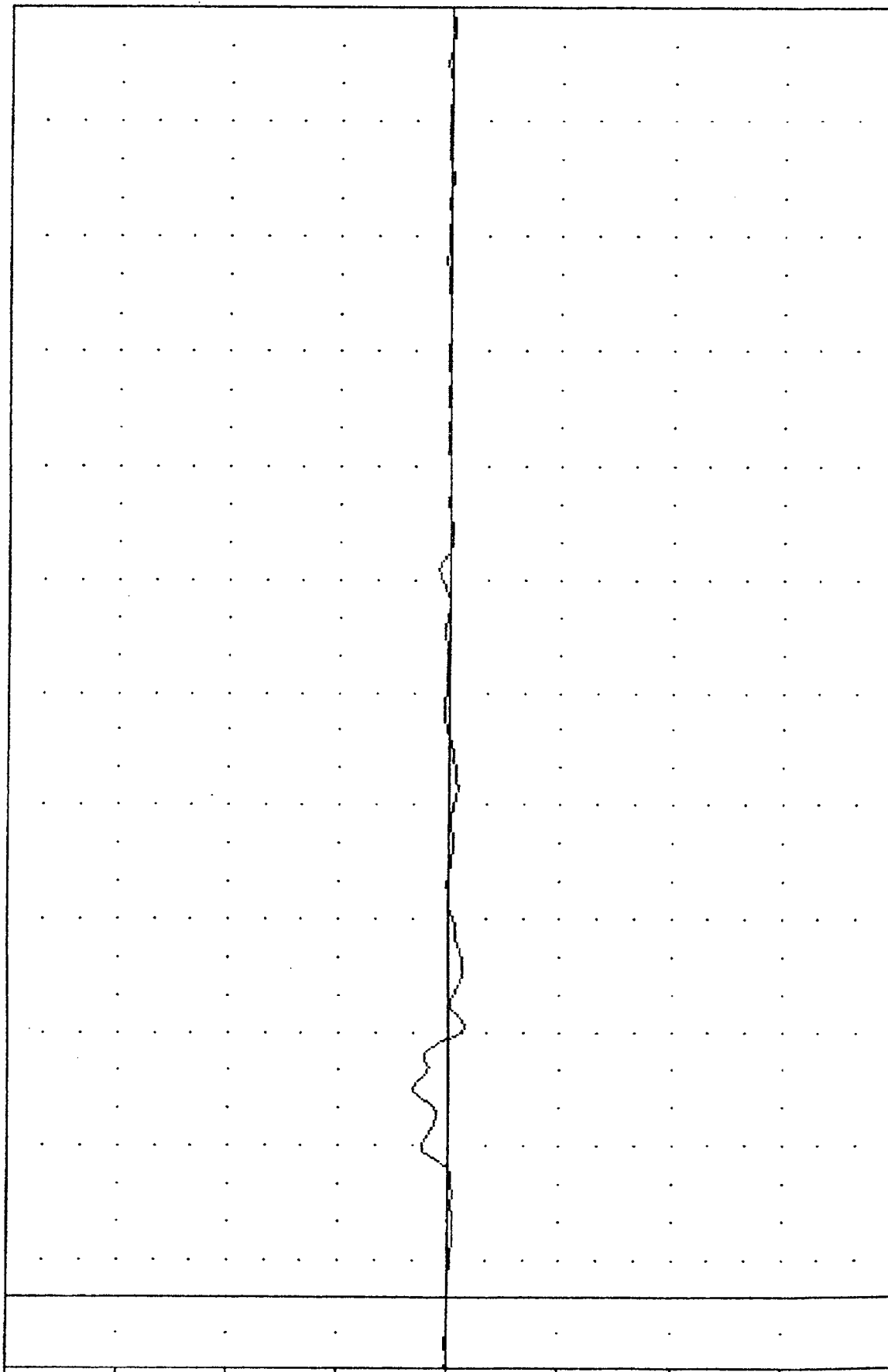
150.00

100.00

50.00

0.00

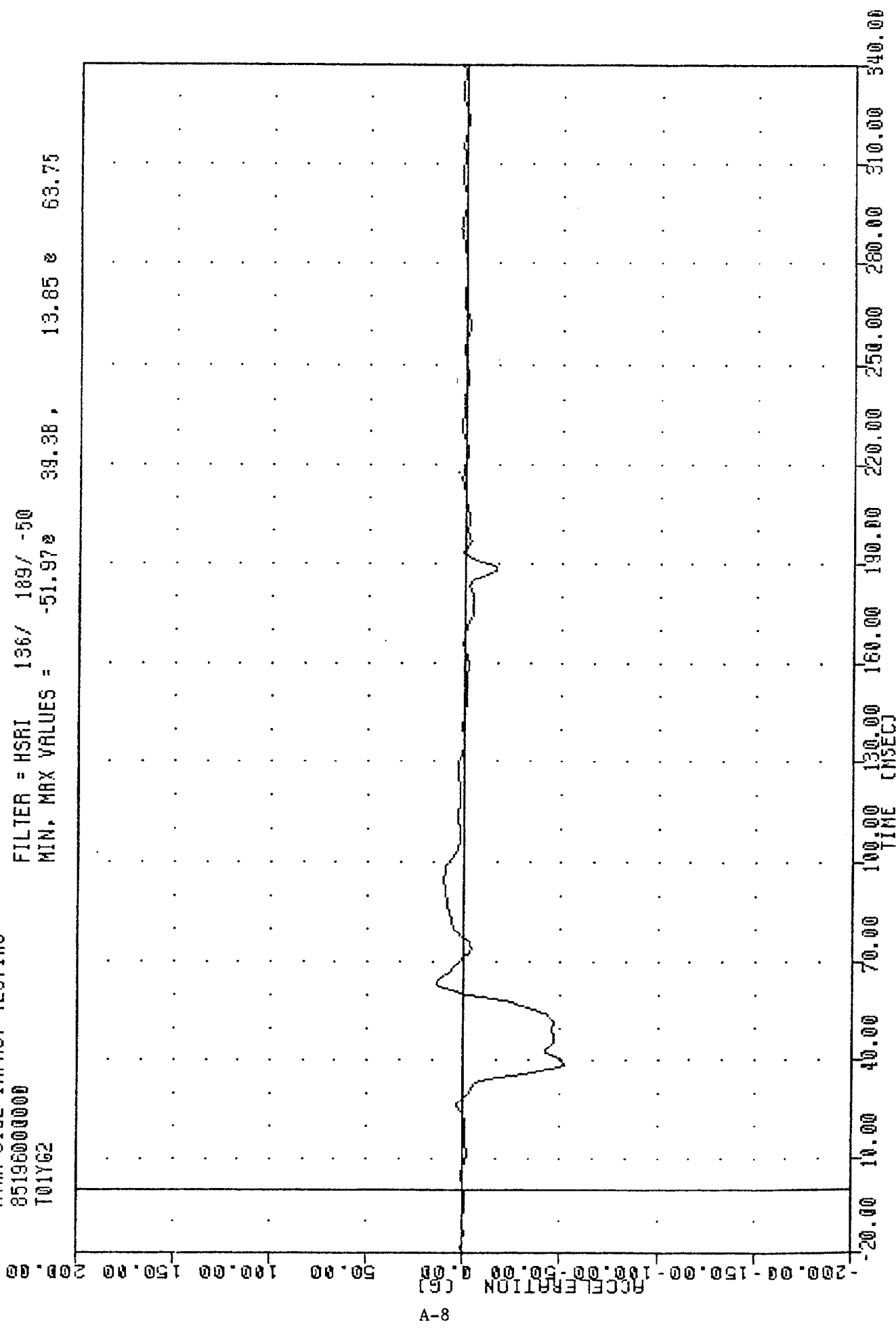
ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER UPPER SPINE ACCELERATION X AXIS

TRC 850715
 MYNA SIDE IMPACT TESTING
 851960000000
 T01Y62
 PLOT DATE 23-JUL-85 15:01:36
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -51.97e 39.38, 13.85 e 63.75



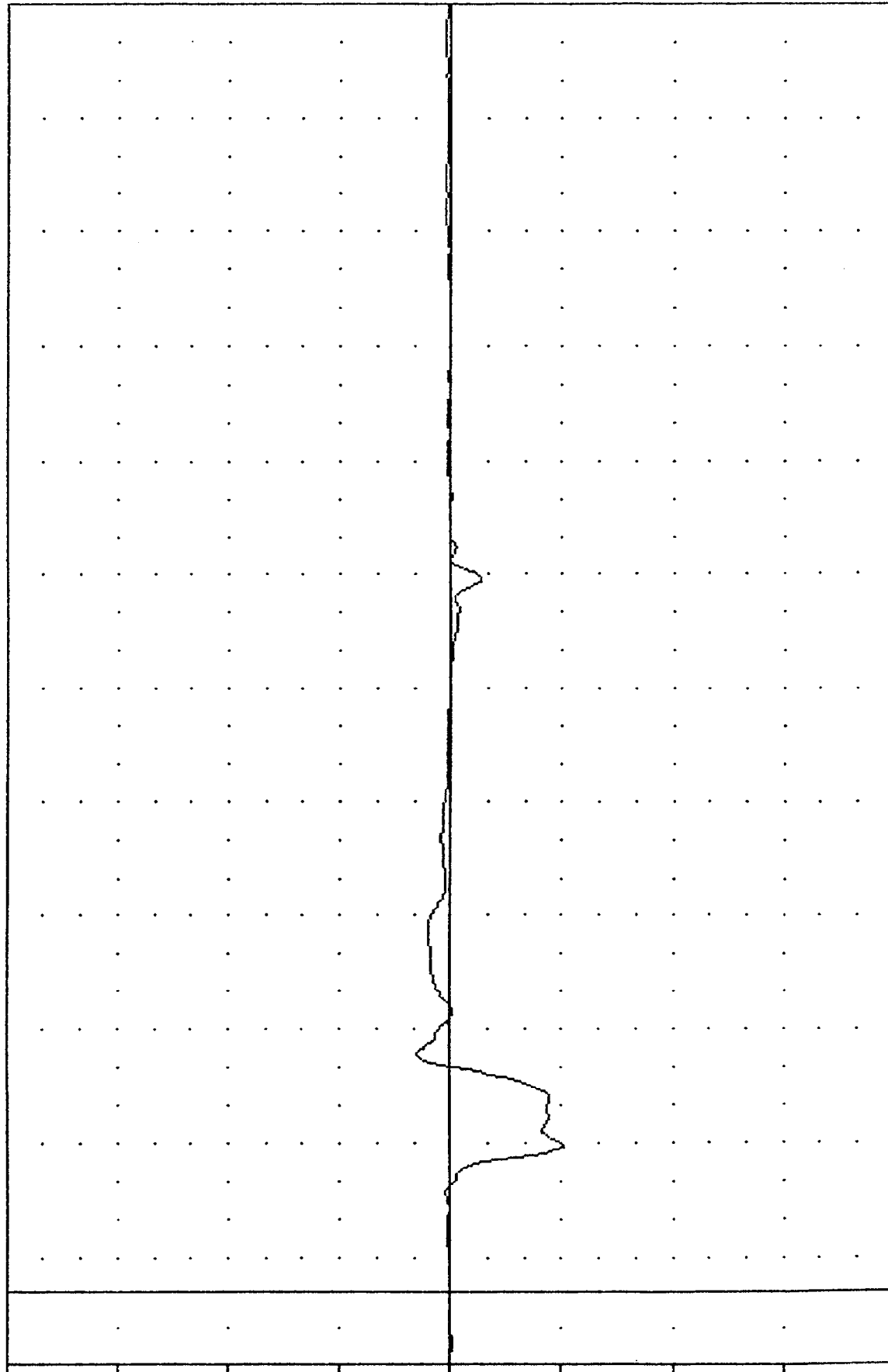
MYNA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER UPPER SPINE ACCELERATION Y AXYS

TRL
 MVMA SIDE IMPACT TESTING
 85196000000
 T01Y6B

PLOT DATE 25-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -51.040 39.38 15.29 63.13

A-9
 ACCELERATION (G)
 200.00
 150.00
 100.00
 50.00
 0.00
 -50.00
 -100.00
 -150.00
 -200.00

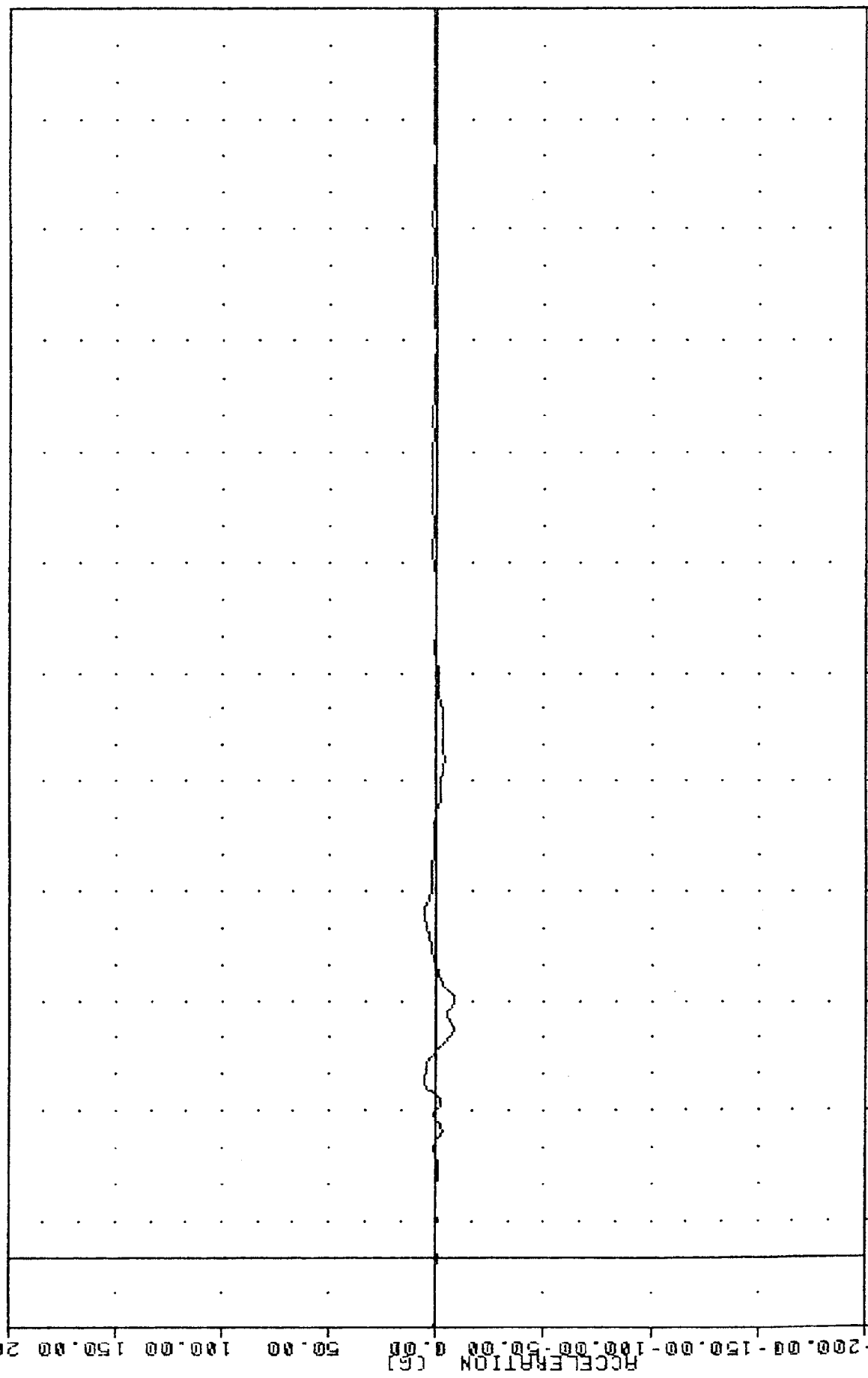


MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER UPPER SPINE ACCELERATION #2 Y AXIS

INC 7650713
 NVMA SIDE IMPACT TESTING
 85196000000
 101262

PLOT DATE 23-JUL-83 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -8.55g 70.63, 5.63 g 48.13



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)
 NVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER UPPER SPINE ACCELERATION Z AXIS

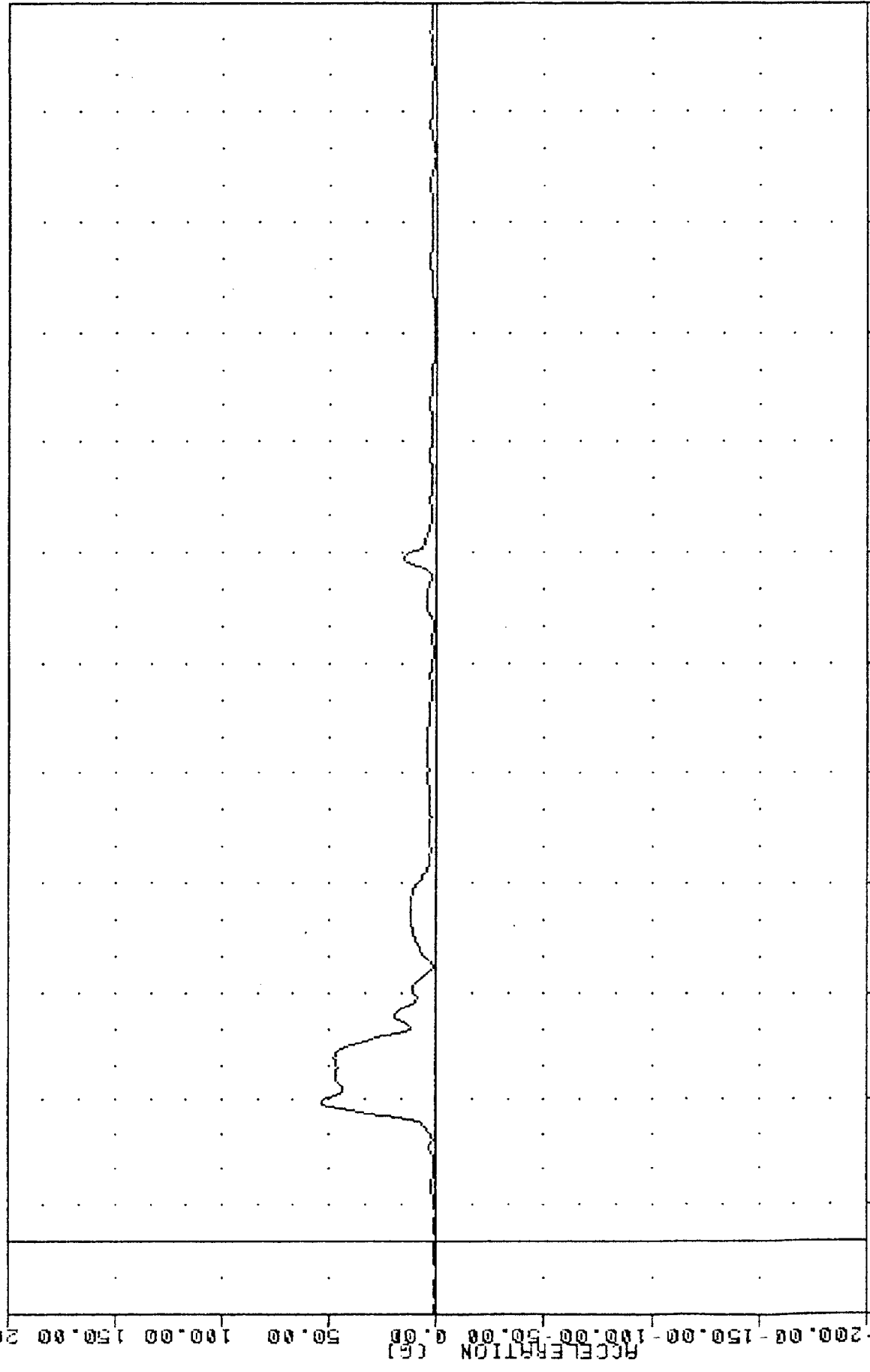
TRC 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 T01R02

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = 0.08 53.39 39.38
 -8.13

200.00
 150.00
 100.00
 50.00
 0.00
 -50.00
 -100.00
 -150.00
 -200.00

A-11



TIME (MSEC) 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

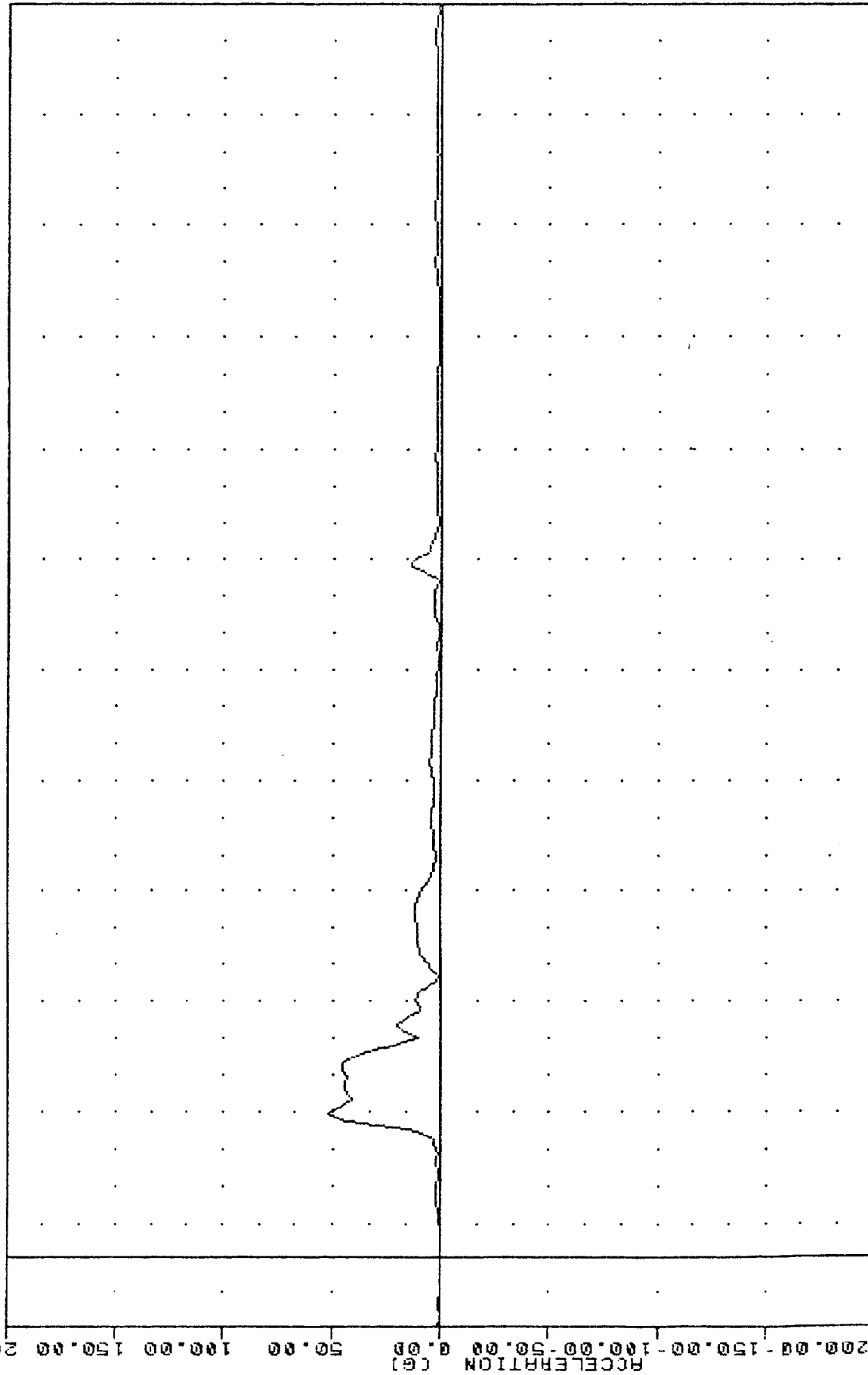
MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER UPPER SPINE RESULTANT ACCELERATION

THC , 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 T01R6B

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = 0.248 -8.75 , 52.48 39.38

200.00



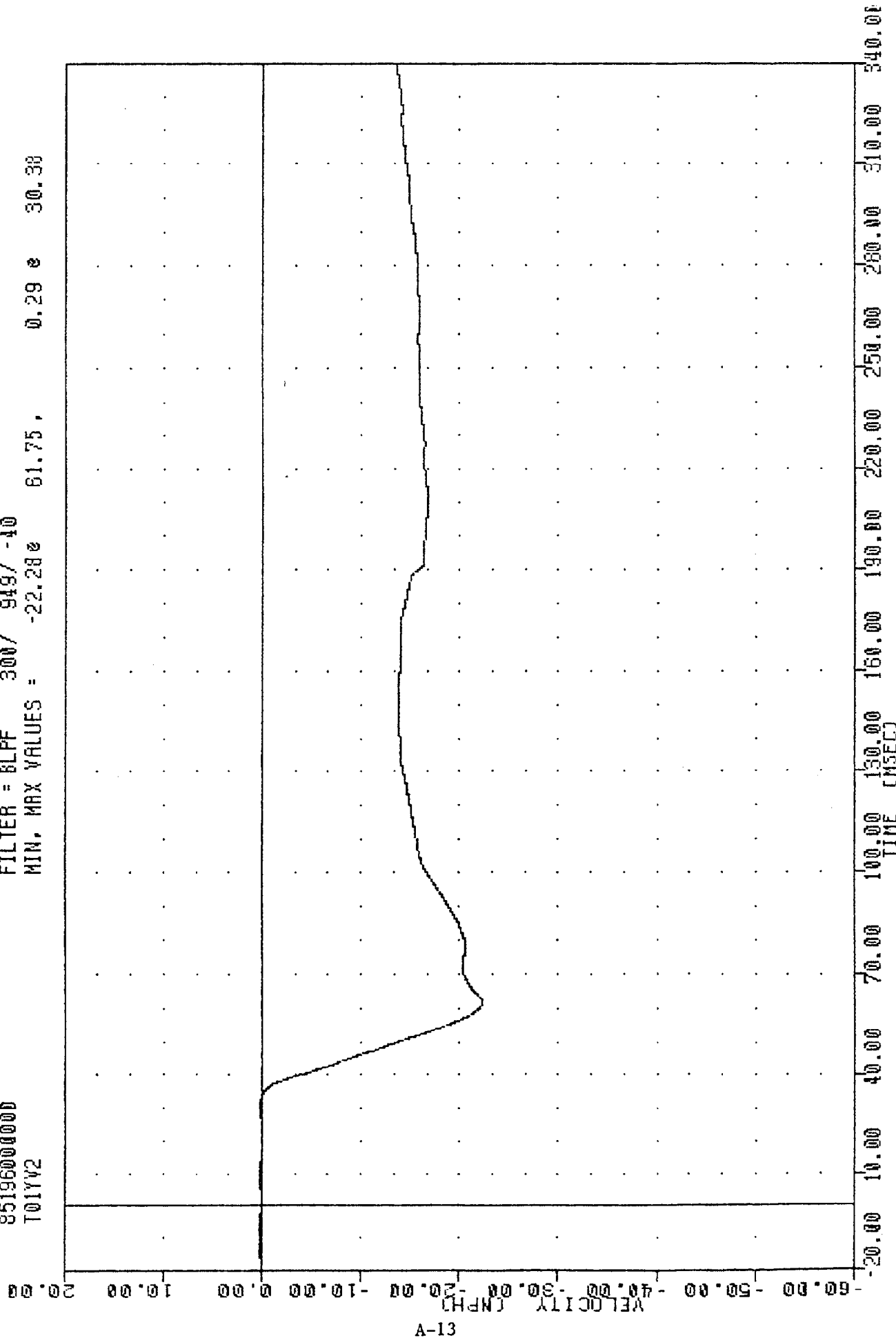
A-12

200.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)
 MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER UPPER SPINE RESULTANT ACCELERATION #2

TRC 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 T01YV2

PLUT DATE 23-JUL-85 15:04:44

FILTER = 8LFF 300/ 949/ -40
 MIN. MAX VALUES = -22.28 61.75, 0.29 30.38



MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 UPPER SPINE VELOCITY Y AXIS

TRC , 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 T01YVB

PLOT DATE 23-JUL-85 15:04:44

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -21.75 61.63 0.06 30.00

20.00

10.00

0.00

-10.00

-20.00

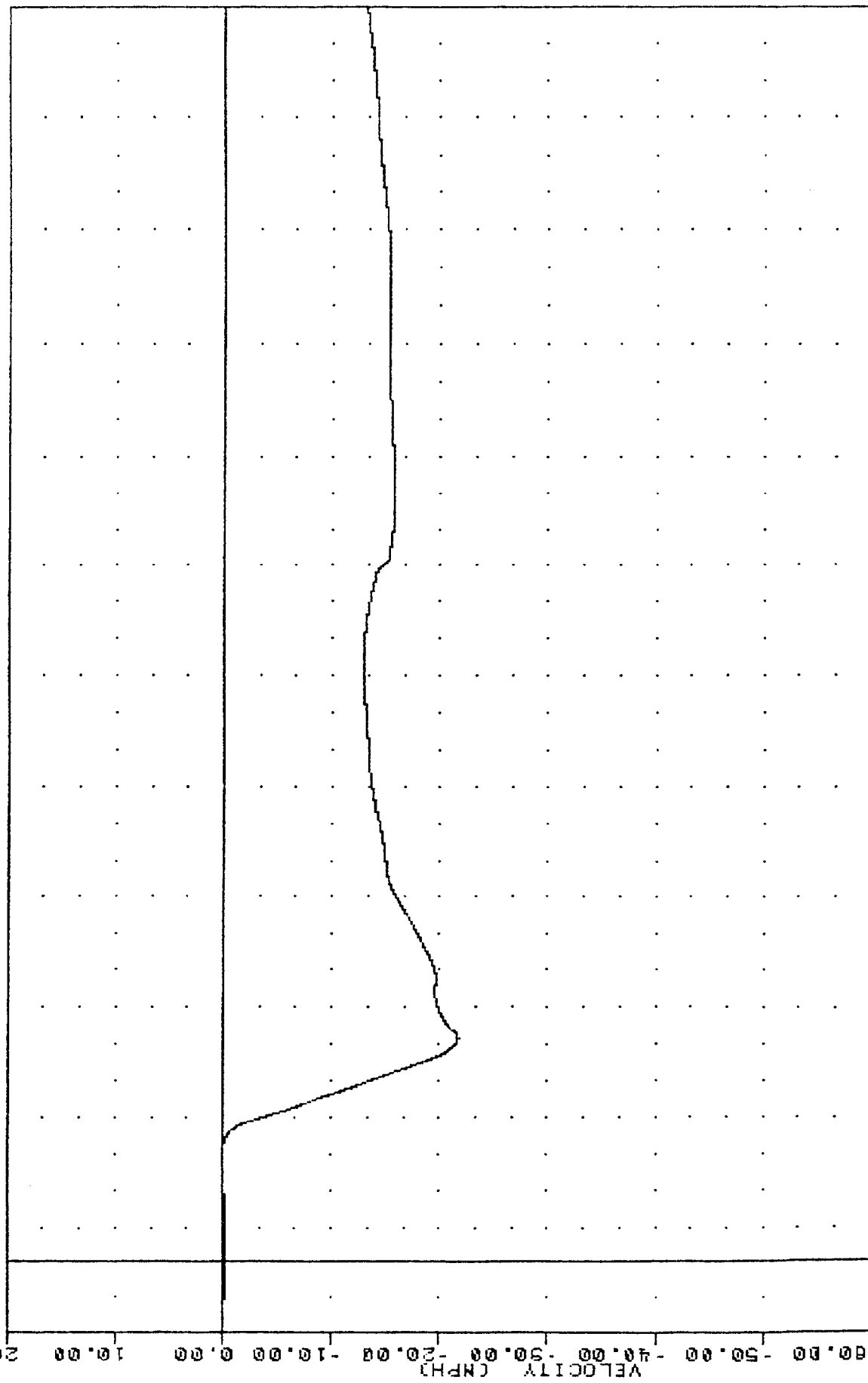
-30.00

-40.00

-50.00

-60.00

A-14



VELOCITY (MPH)

TIME (MSEC)

MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 UPPER SPINE VELOCITY - 2 Y AXIS

TRC , 850715
 NVMA SIDE IMPACT TESTING
 85196000000
 T12XG2

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSR1 136/ 189/ -50
 MIN, MAX VALUES = -22.63g 38.13, 14.74 g 96.88

200.00

150.00

100.00

50.00

0.00

-50.00

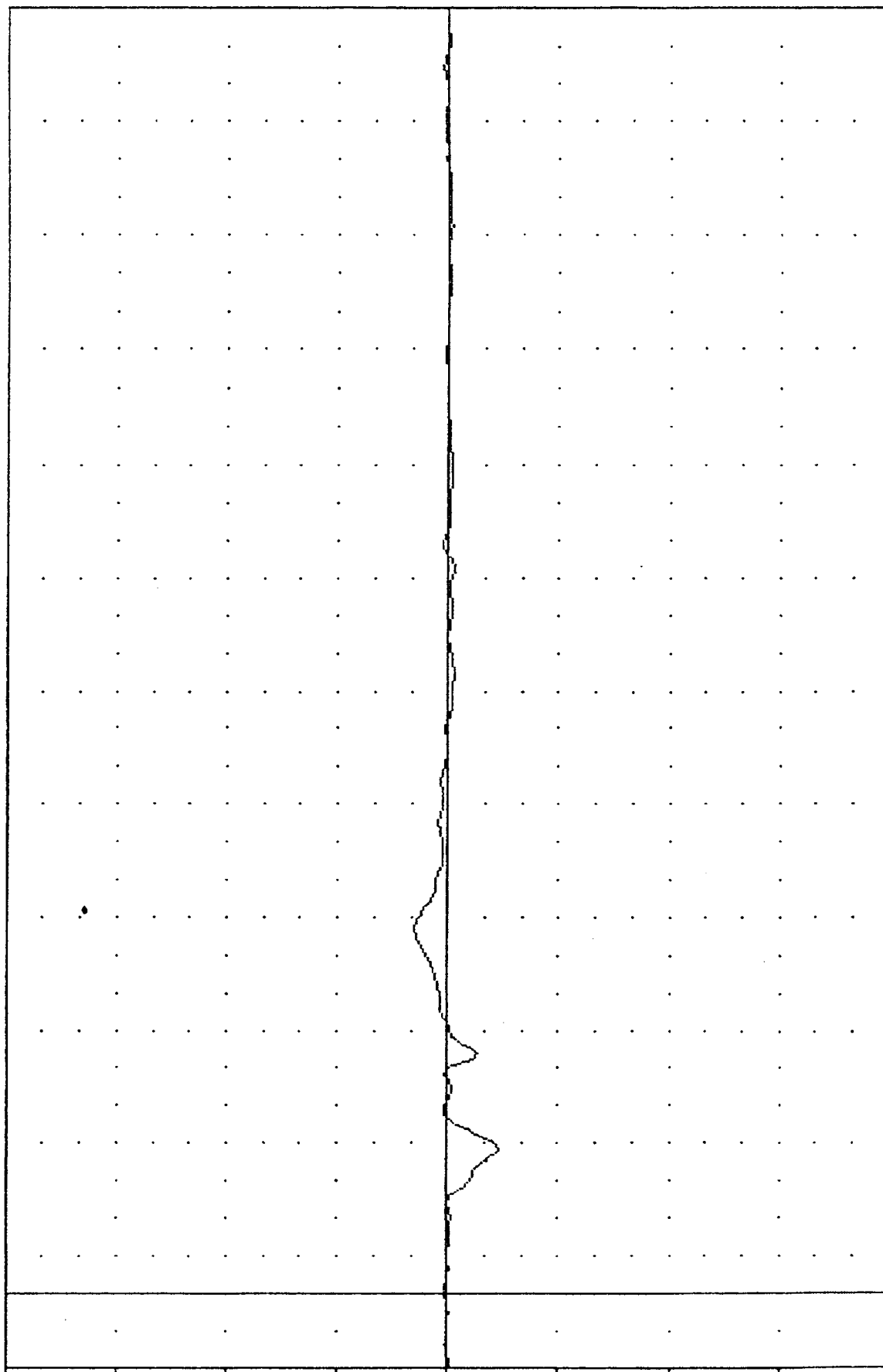
-100.00

-150.00

-200.00

A-15

ACCELERATION (G)



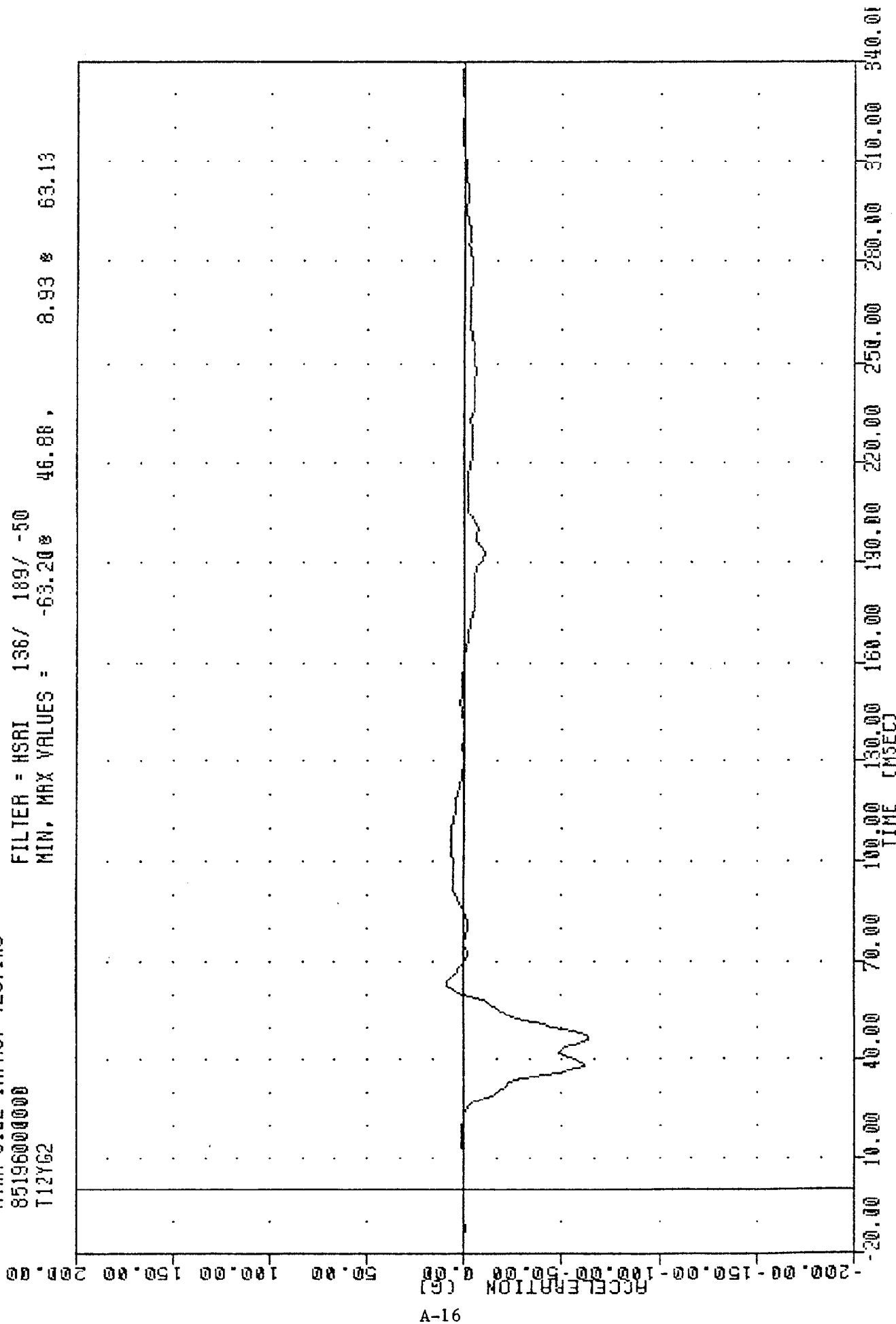
TIME (MSEC) 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

NVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER LOWER SPINE ACCELERATION X AXIS

TRC 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 T12Y62

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -63.20 46.86, 8.93 63.13



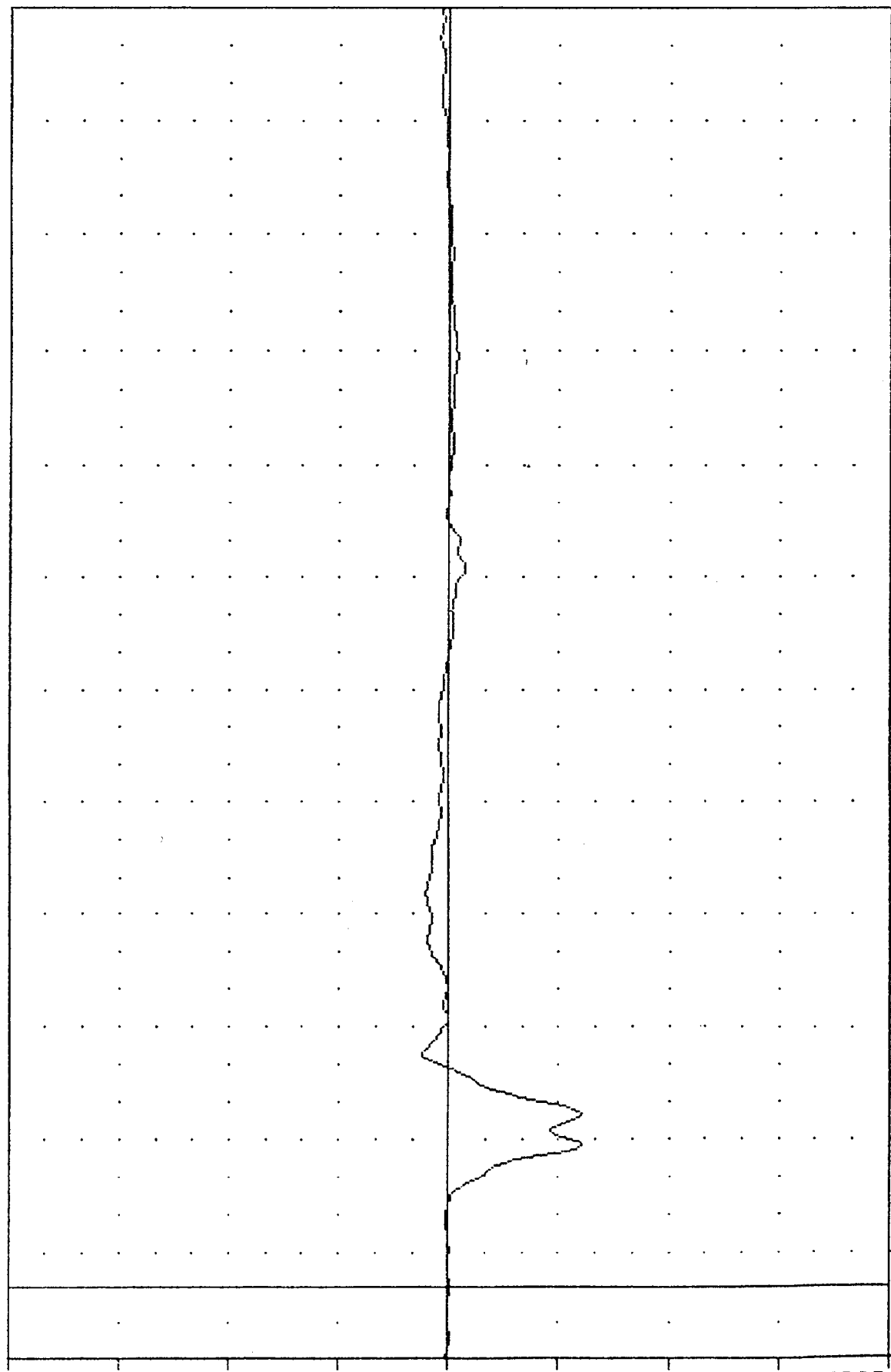
MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER LOWER SPINE ACCELERATION Y AXIS

TMC 850715
 MYMA SIDE IMPACT TESTING
 85196000000
 T12Y6B

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -59.96 46.25 11.57 63.13

71-A
 ACCELERATION (G)
 -200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (msec)

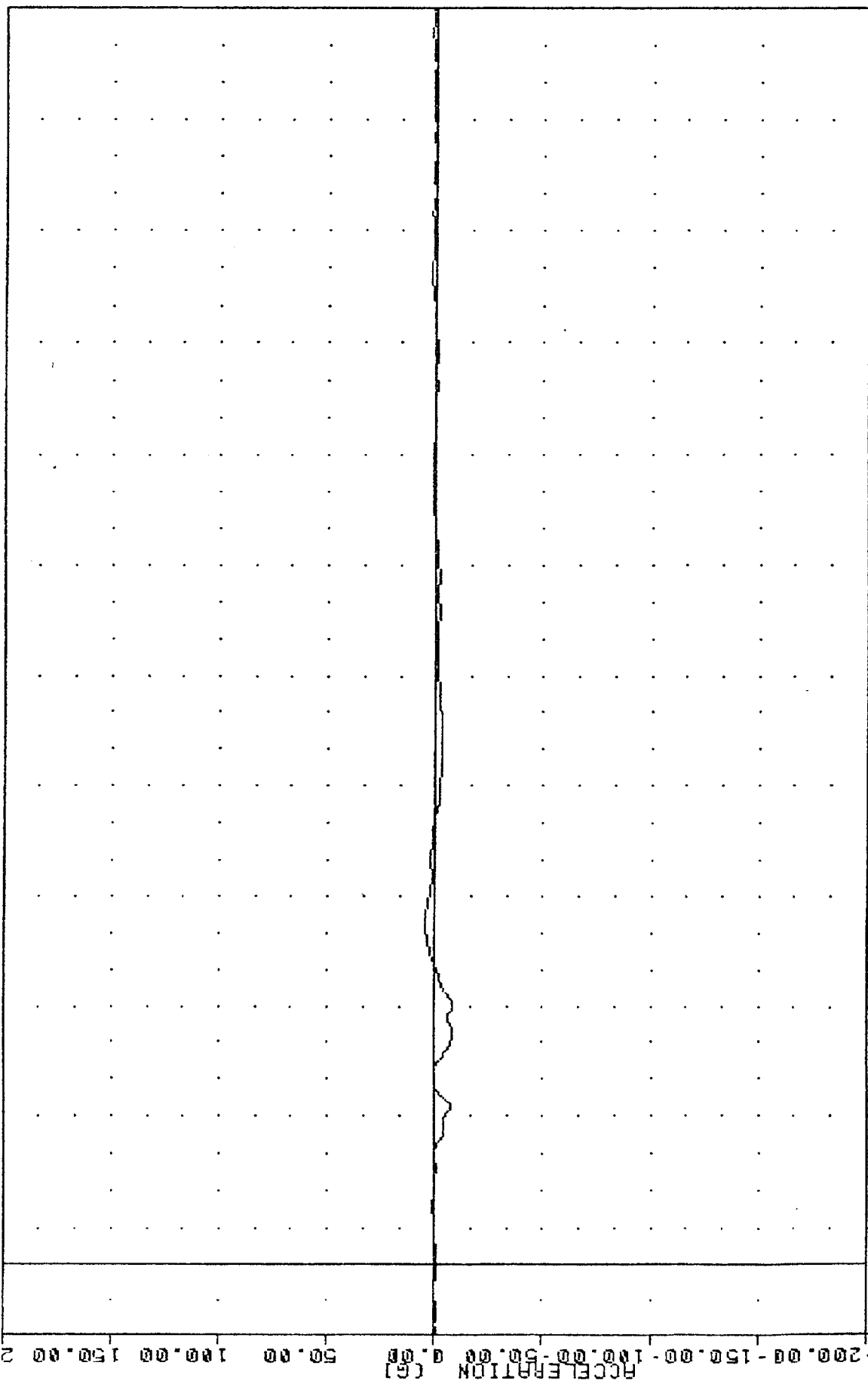
MYMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER LOWER SPINE ACCELERATION -2 Y AXIS

TRC
 851960000000
 112262

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -8.73% 62.50, 4.89 % 93.13

200.00

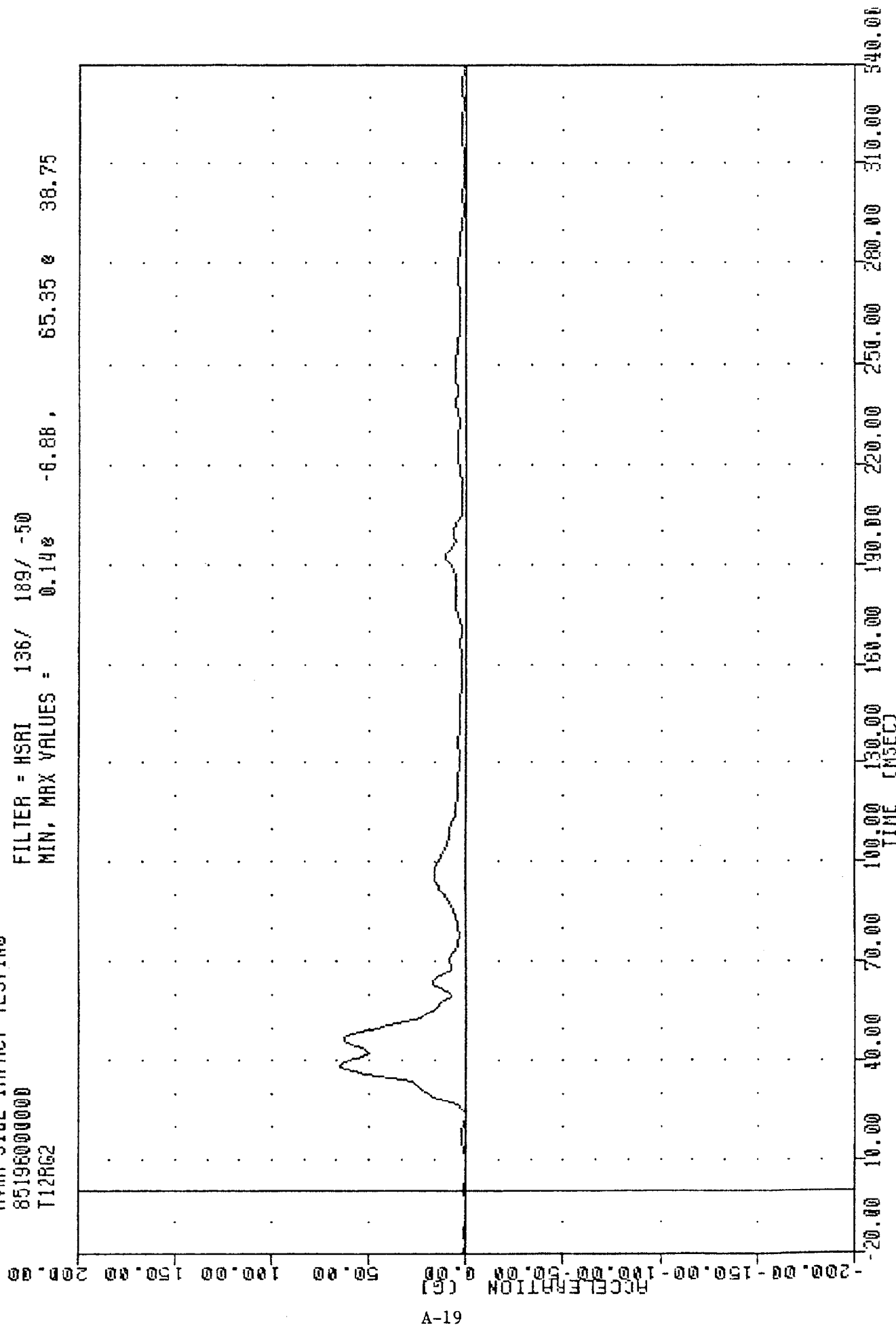


MYMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER LOWER SPINE ACCELERATION Z AXIS

TRC
MVMA SIDE IMPACT TESTING
85196000000
T12RG2

PLUT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = 0.148 -6.88, 65.35 & 38.75



MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
PASSENGER LOWER SPINE RESULTANT ACCELERATION

TAC , 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 T12R6B

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = 0.08 8.75 64.06 38.13

200.00

150.00

100.00

50.00

0.00

-50.00

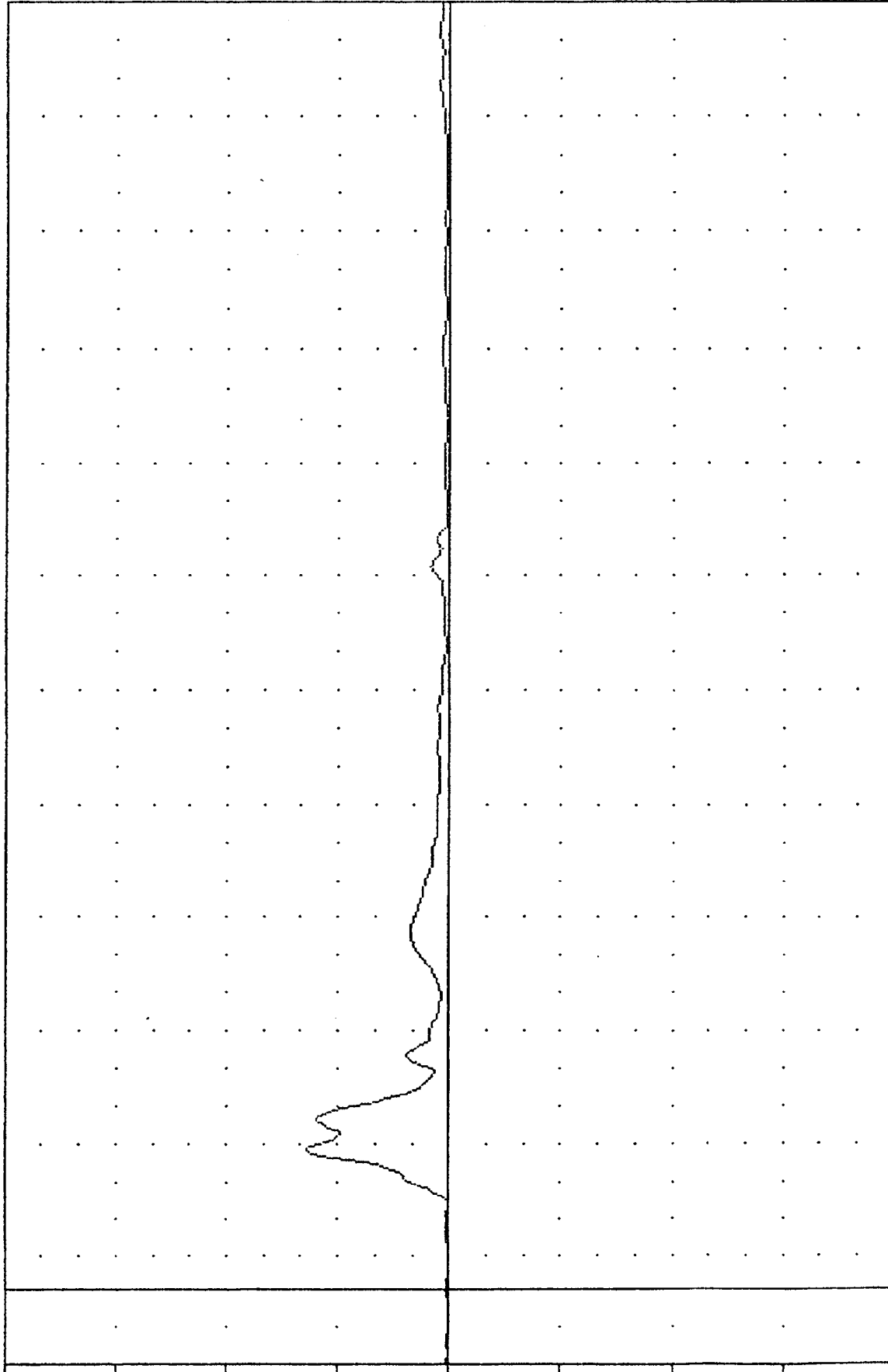
-100.00

-150.00

-200.00

0-A-20

ACCELERATION (G)



MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER LOWER SPINE RESULTANT ACCELERATION #2

TRC

, 850715

NVMA SIDE IMPACT TESTING

23-JUL-85

15:04:44

851960000000

T12YV2

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -33.25 314.25, 0.08 23.25

20.00

10.00

0.00

-10.00

-20.00

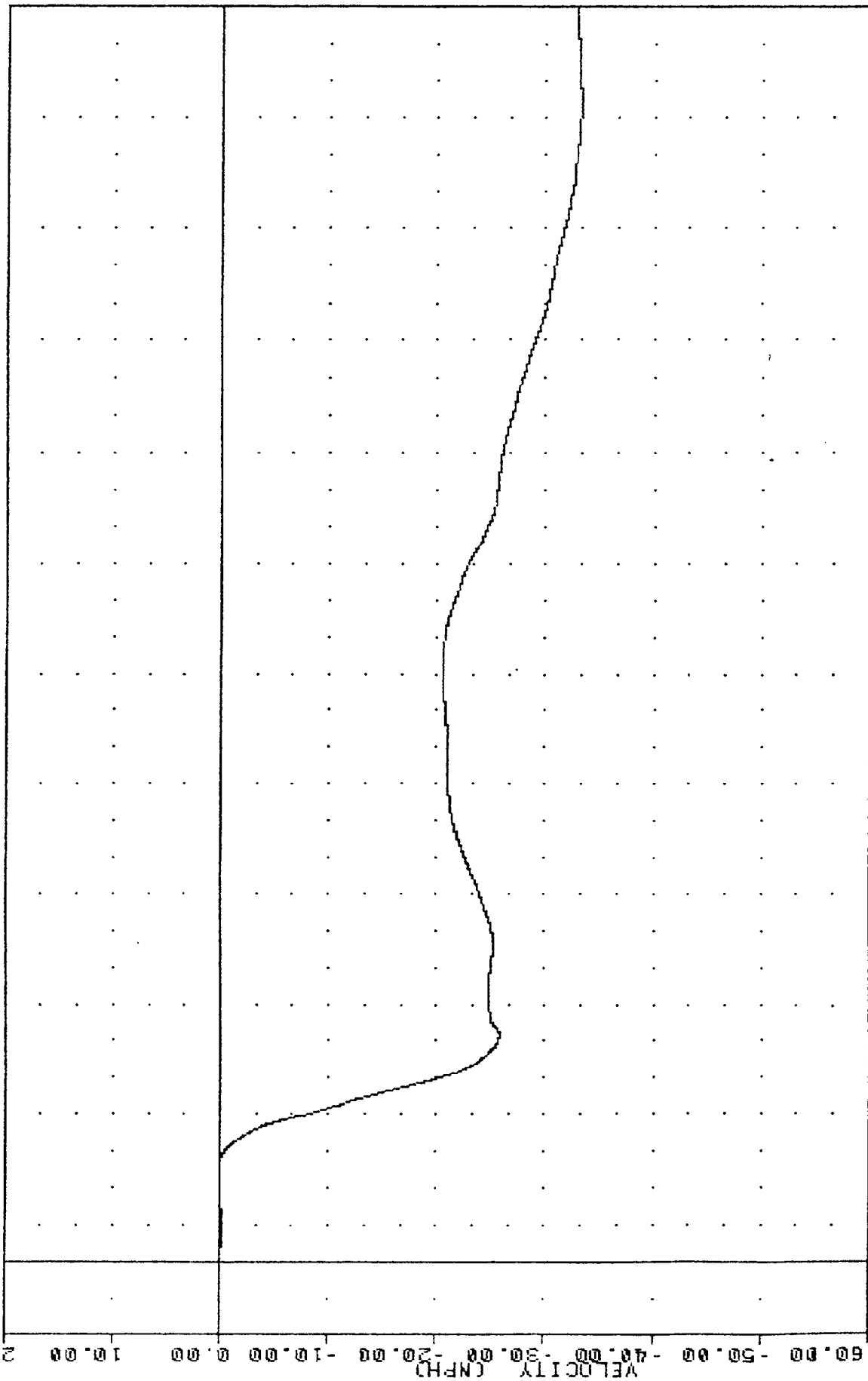
-30.00

-40.00

-50.00

-60.00

A-21



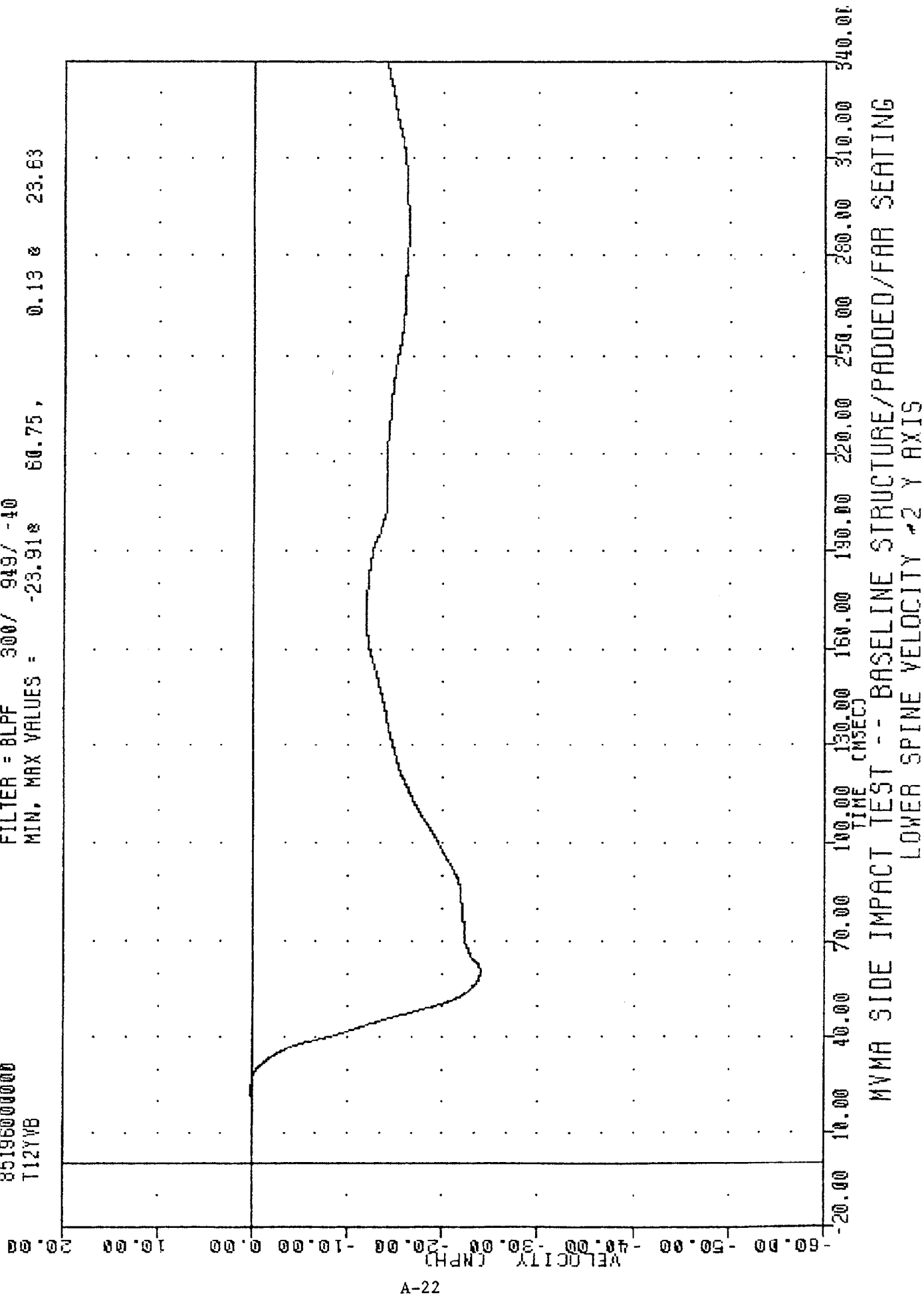
-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

NVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
LOWER SPINE VELOCITY Y AXIS

TRC
 850715
 MVNA SIDE IMPACT TESTING
 851960000000
 T12YVB

PLOT DATE 23-JUL-85 15:04:44

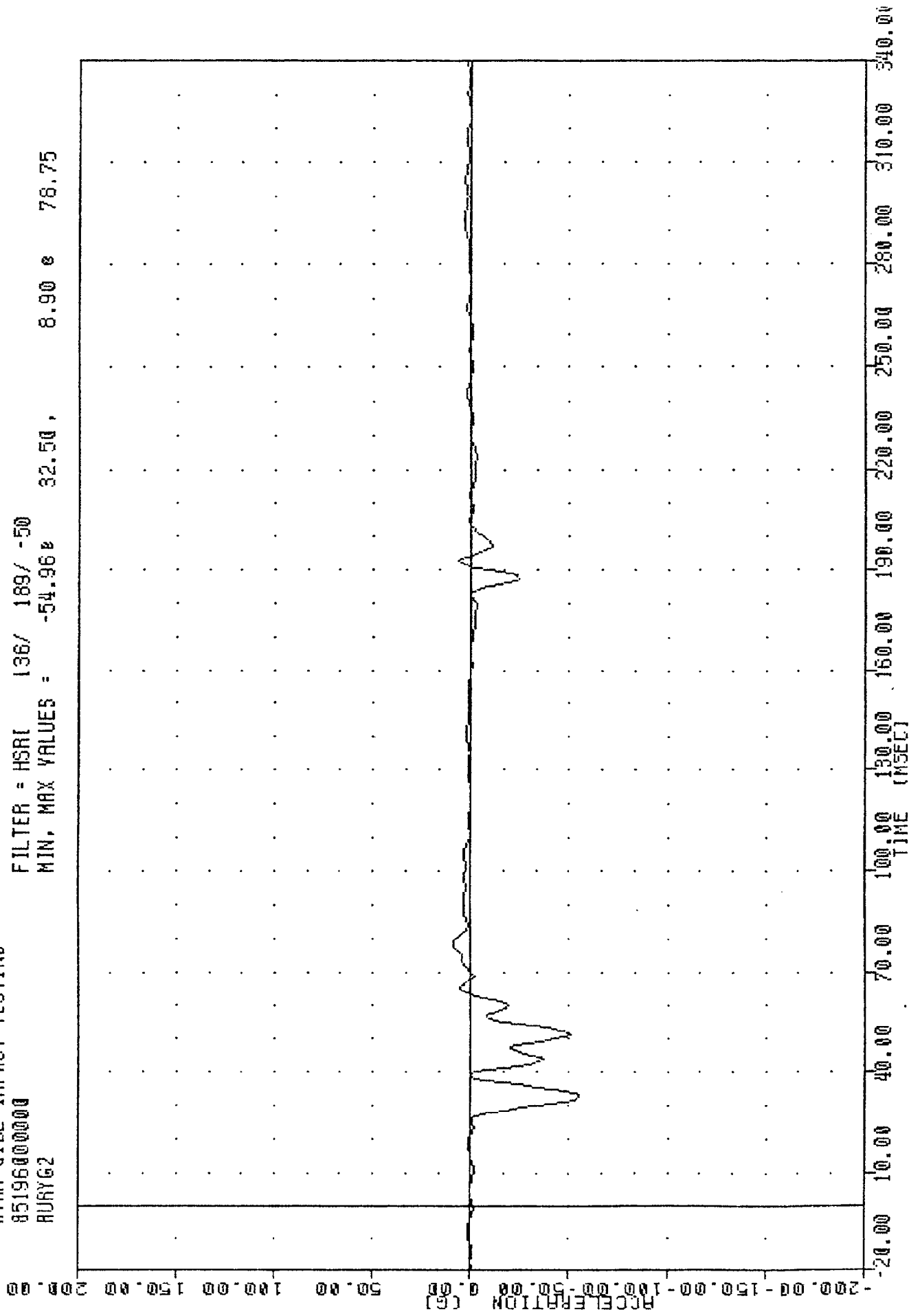
FILTER = 8LPF 300/ 949/ -10
 MIN. MAX VALUES = -23.91 60.75, 0.13 23.63



TRC
 NVMA SIDE IMPACT TESTING
 85196000000
 RURY62

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -54.96% 32.50, 8.90 & 78.75

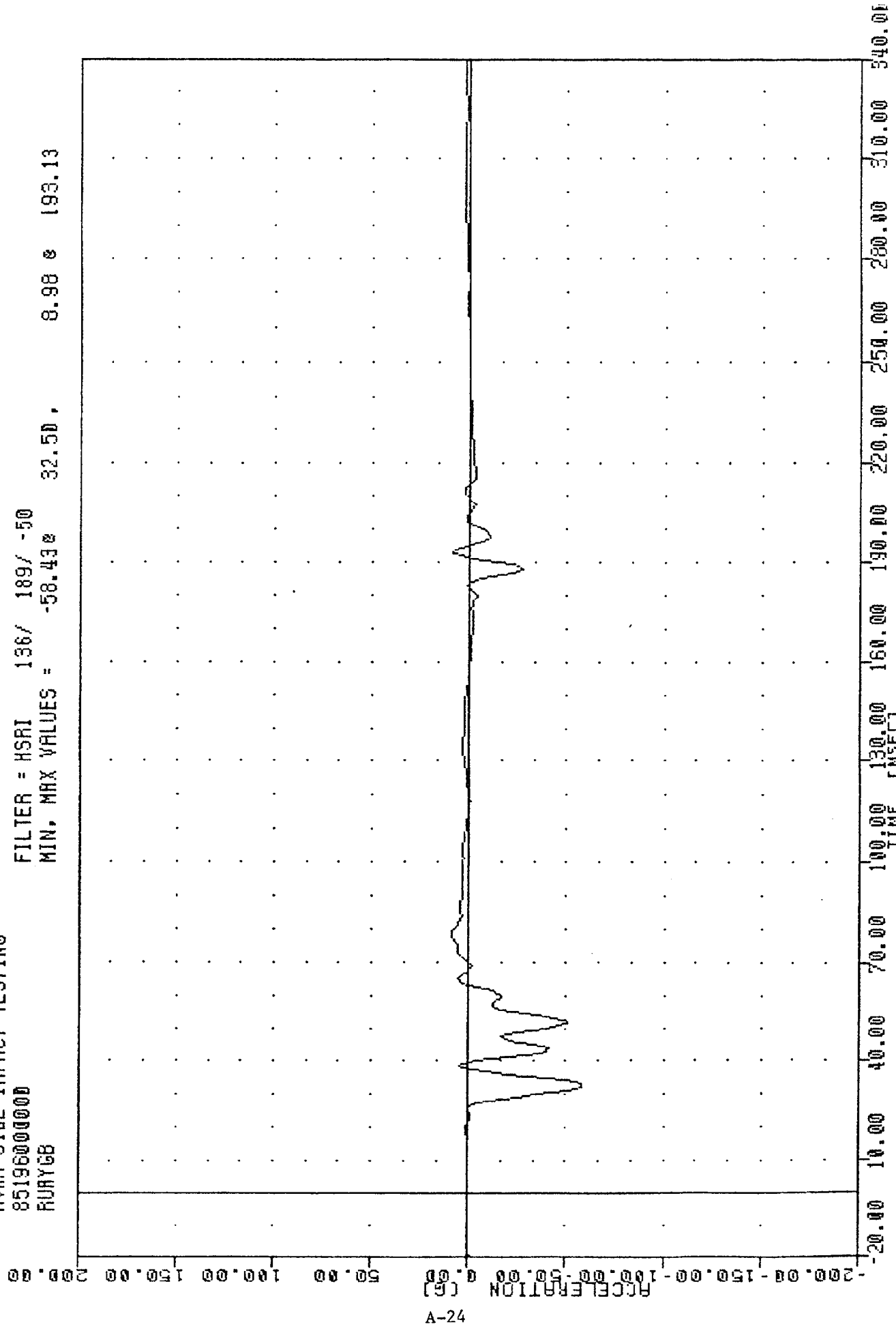


MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER RIGHT UPPER RIB ACCELERATION Y AXIS

TRC
 MVMA SIDE IMPACT TESTING
 85196000000
 RURYGB

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -58.430 32.50, 8.98 & 193.13



MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER RIGHT UPPER RIB ACCELERATION -2 Y AXIS

TAC
MVMA SIDE IMPACT TESTING
85196000000
RURYV2

PLOT DATE 23-JUL-85 15:04:44

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -20.818 64.25, 0.05 e -2.13

20.00

10.00

0.00

-10.00

-20.00

-30.00

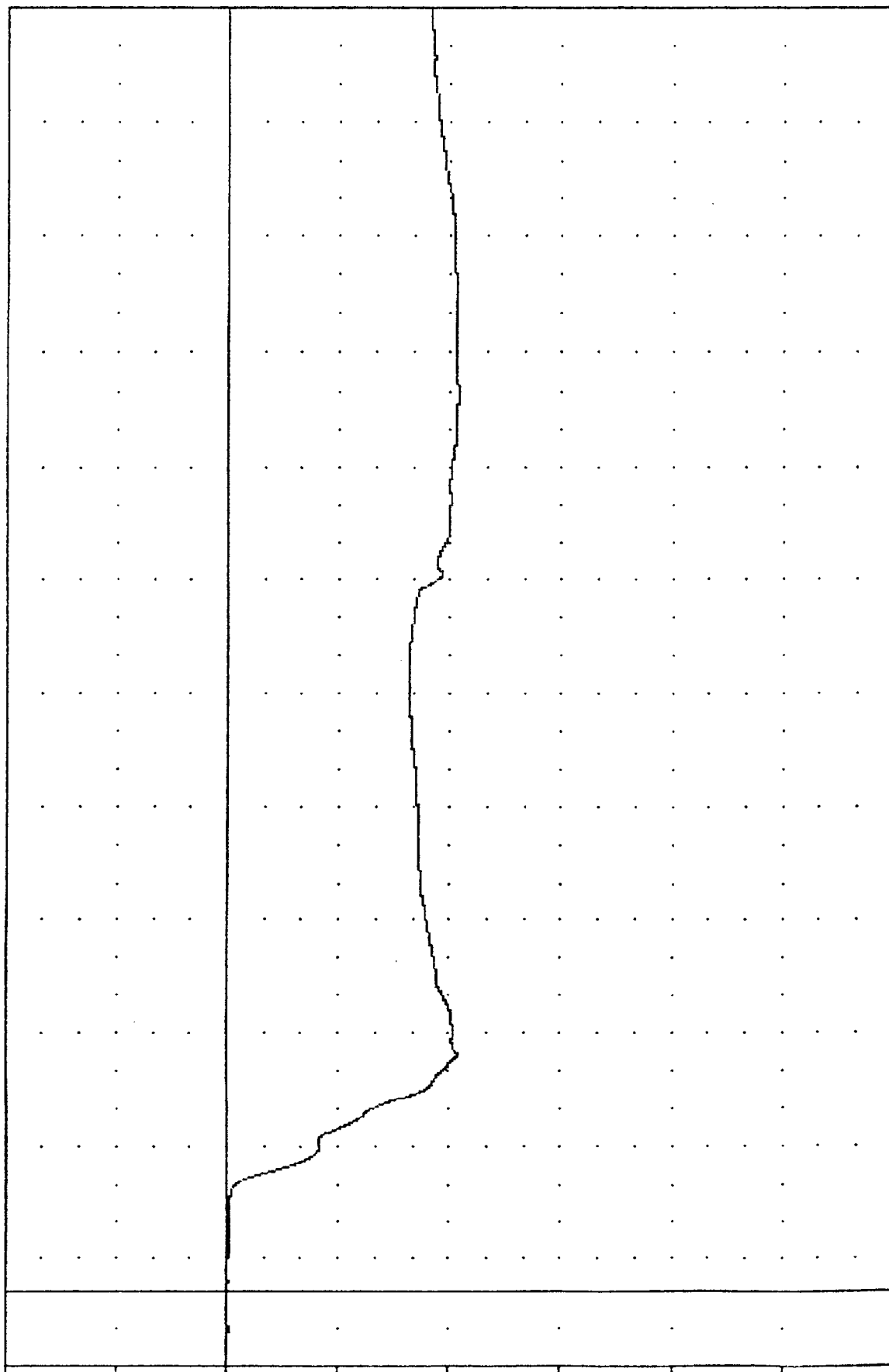
-40.00

-50.00

-60.00

A-25

VELOCITY (MPH)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

TIME (MSEC)

MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING

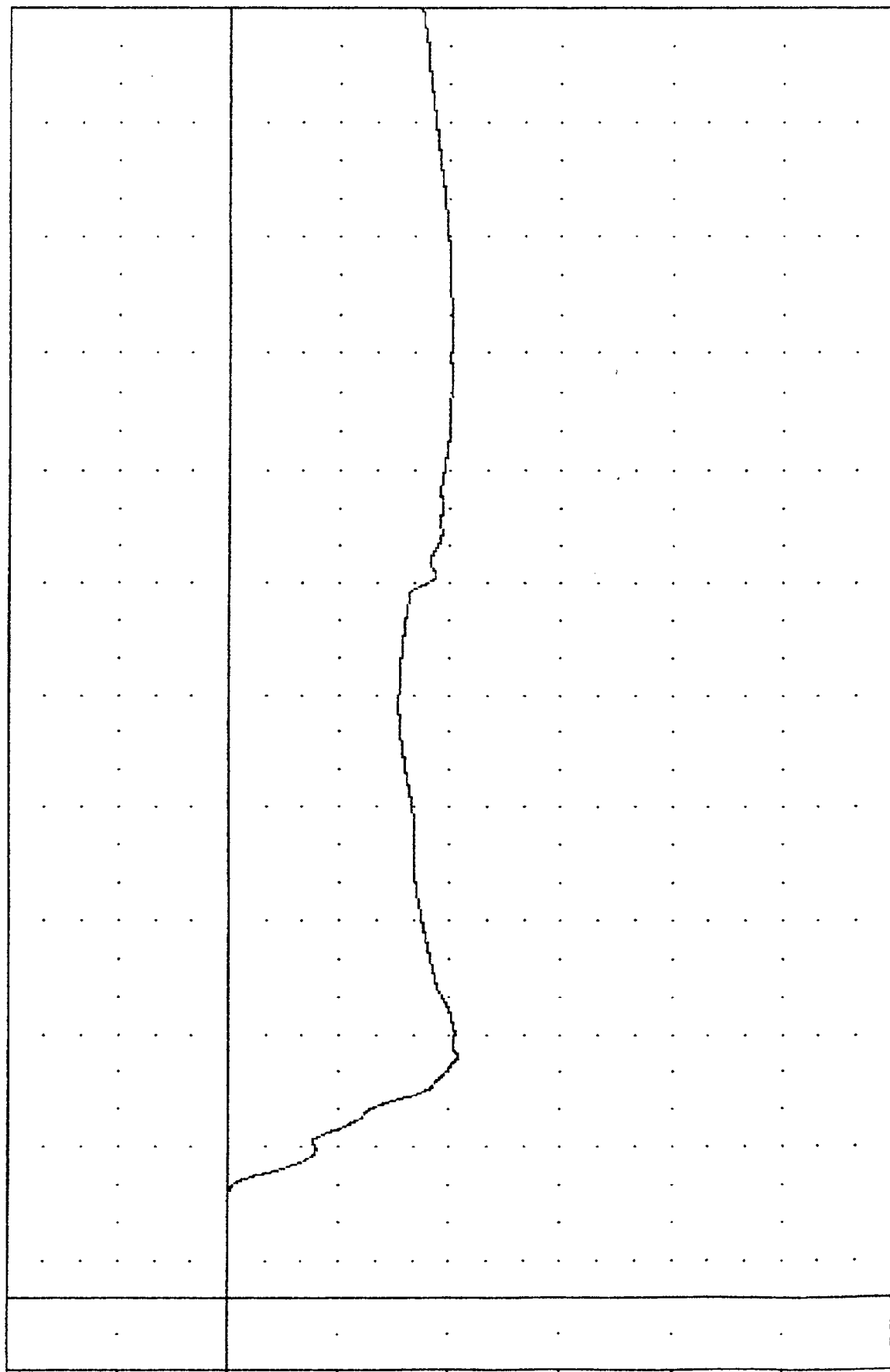
RIGHT UPPER RIB VELOCITY Y AXIS

TRC
 NVMA SIDE IMPACT TESTING
 85196000000
 RURYVB

PLOT DATE 23-JUL-85 15:04:44

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -20.86 64.25, 0.05 24.75

20.00
 10.00
 0.00
 -10.00
 -20.00
 -30.00
 -40.00
 -50.00
 -60.00
 -70.00
 -80.00
 -90.00
 -100.00



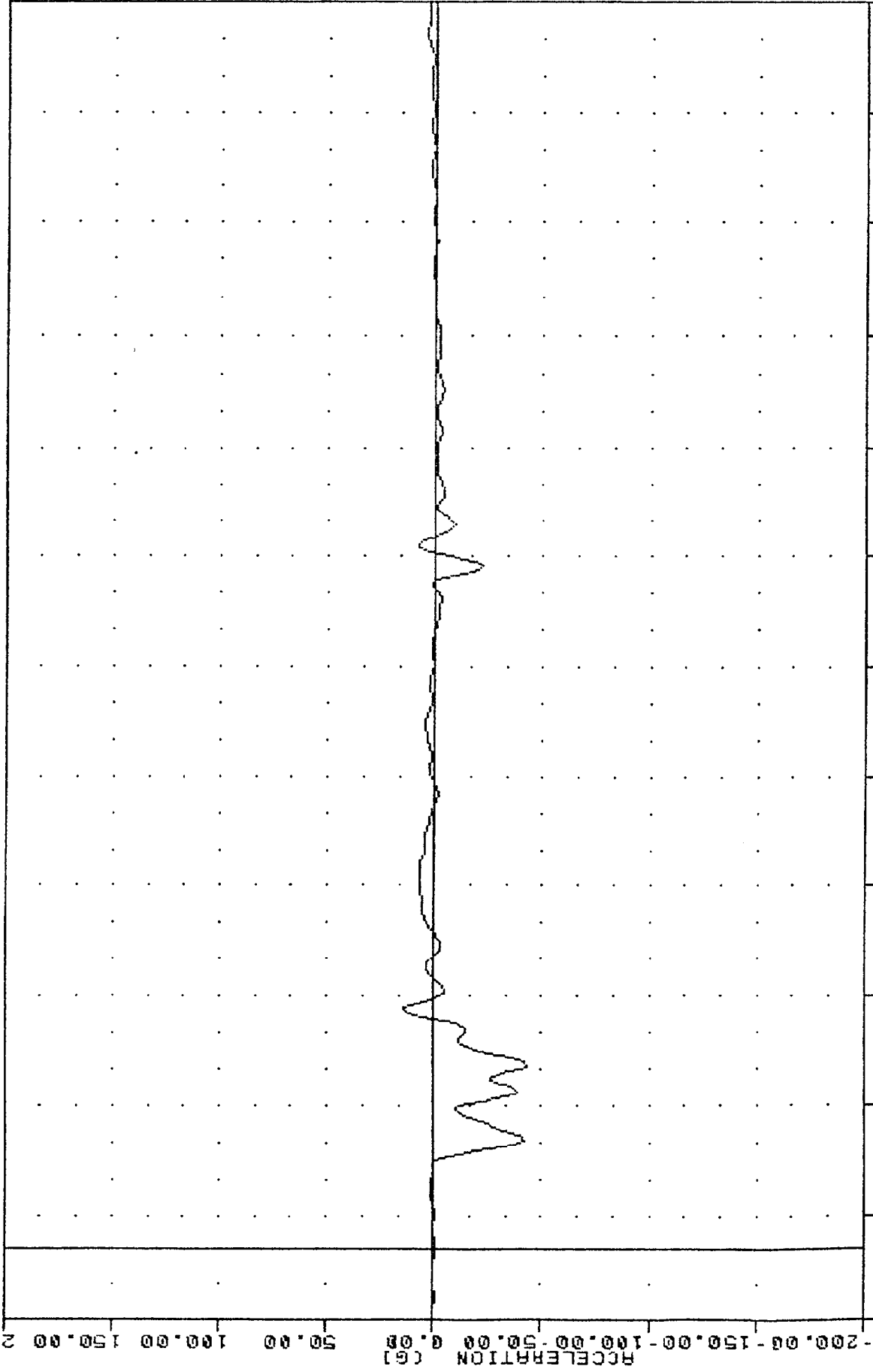
-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

BASELINE STRUCTURE/PADDED/FAR SEATING
 RIGHT UPPER RIB VELOCITY -2 Y AXIS

TAC
 MVMA SIDE IMPACT TESTING
 851960000000
 RLRY62

PLOT DATE 23-JUL-85 15:01:36

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -43.72 & 51.25 , 14.46 & 66.25



MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER RIGHT LOWER AIR ACCELERATION Y AXIS

PLC 850715 PLOT DATE 23-JUL-85 15:01:36

MVMA SIDE IMPACT TESTING

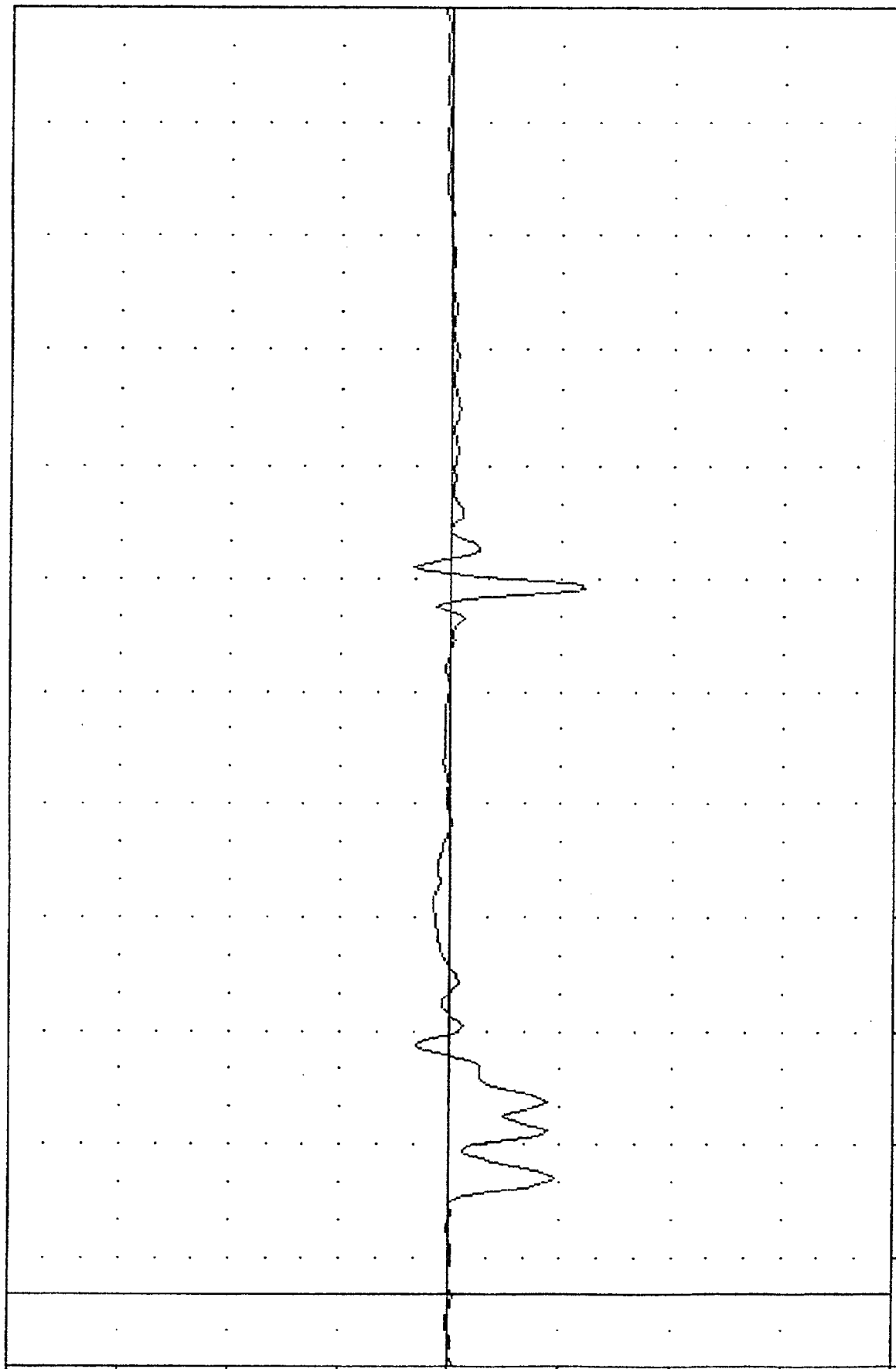
85196000000

ALRYGB

FILTER = HSRI 136/ 169/ -50

MIN. MAX VALUES = -60.04 187.50, 16.71 193.13

ACCELERATION (G)

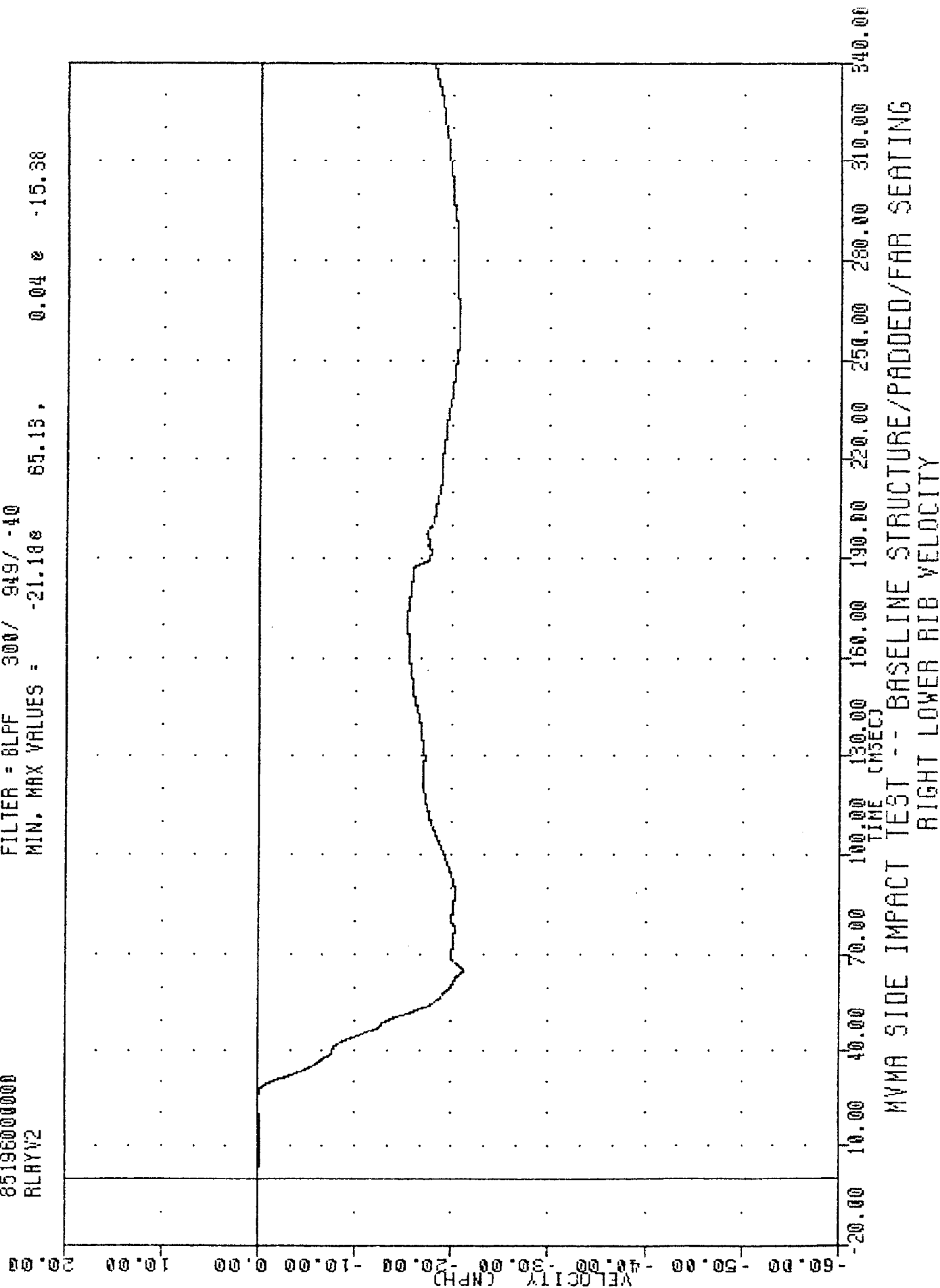


MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
PASSENGER RIGHT LOWER RIB ACCELERATION #2 Y AXIS

TRC 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 RLYV2

PLOT DATE 23-JUL-85 15:04:44

FILTER = 8LPF 300/ 949/ -40
 MIN. MAX VALUES = -21.18 65.13, 0.04 0 -15.38



TAC
MVMA SIDE IMPACT TESTING
851960000000
RLRYWB

PLOT DATE 23-JUL-85 15:04:44

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -24.12e 279.00, 0.04 e -2.25

20.00

10.00

0.00

-10.00

-20.00

-30.00

-40.00

-50.00

-60.00

-70.00

-80.00

-90.00

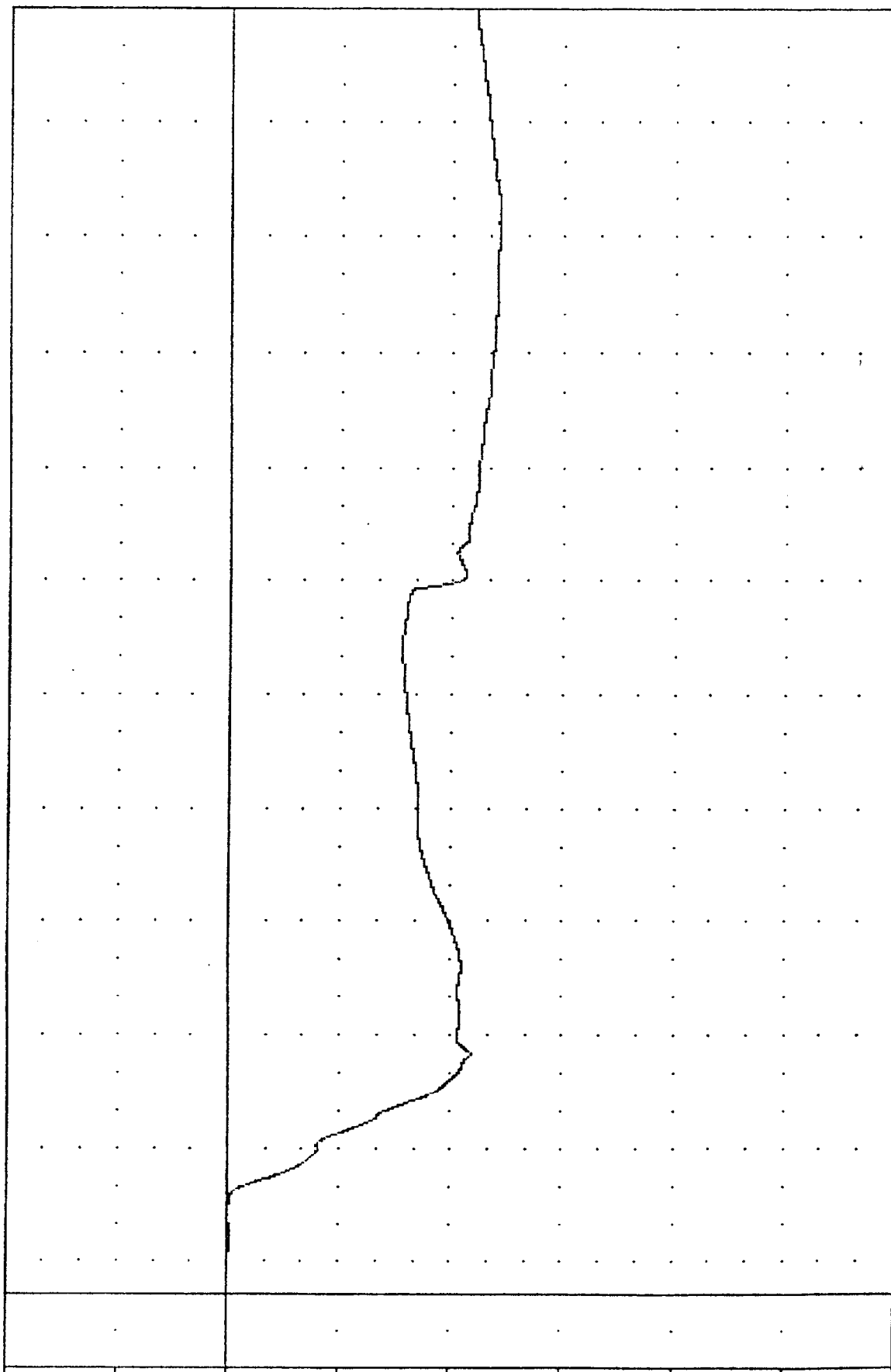
-100.00

-110.00

-120.00

A-30

VELOCITY (MPH)



20.00 10.00 0.00 -10.00 -20.00 -30.00 -40.00 -50.00 -60.00 -70.00 -80.00 -90.00 -100.00 -110.00 -120.00

TIME (NSEC)

MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADOED/FAR SEATING

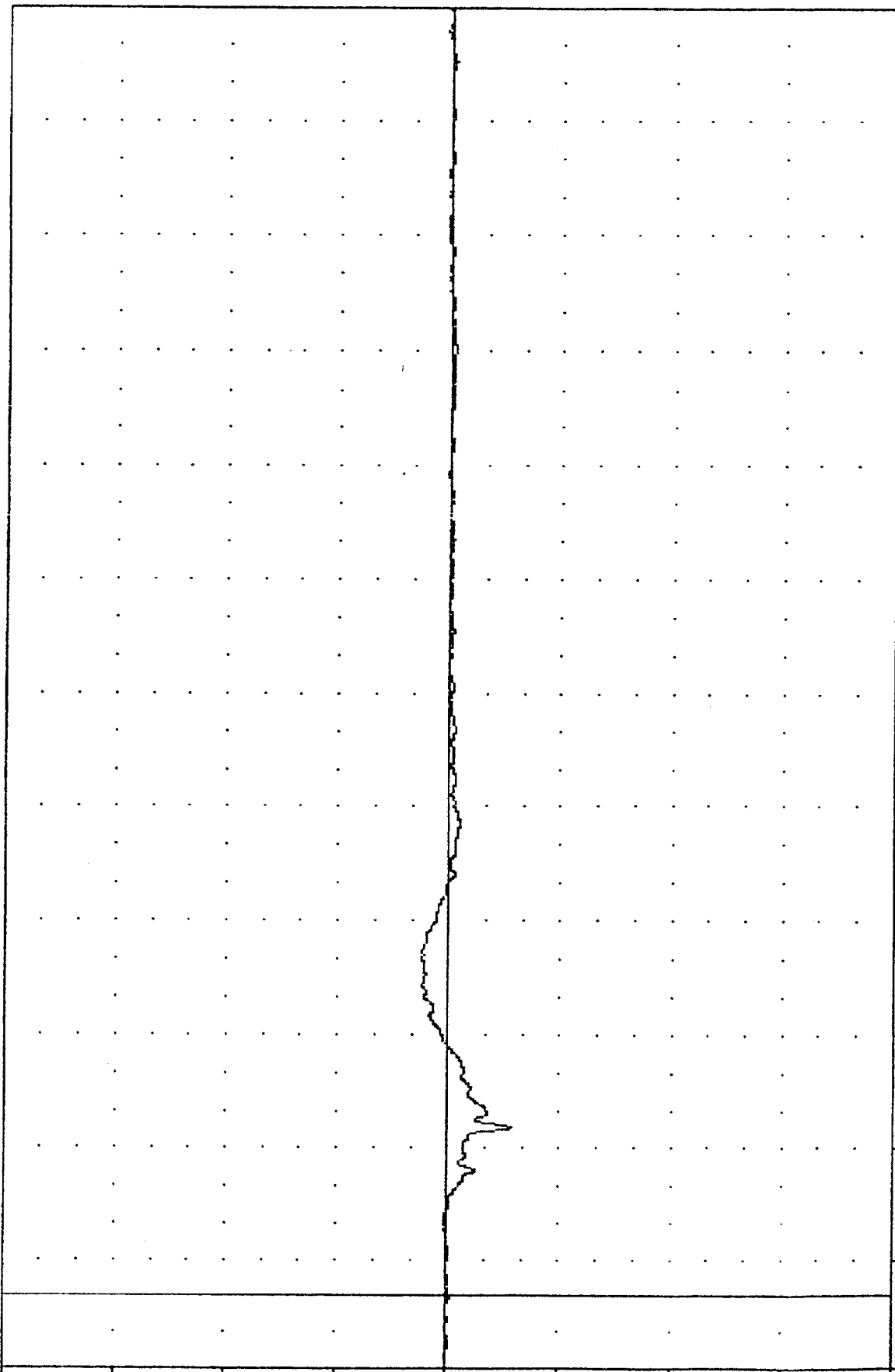
RIGHT LOWER RIB VELOCITY #2 Y AXIS

TRC
MVMA SIDE IMPACT TESTING
85196000000
PEVXG2

PLOT DATE 23-JUL-85 14:42:25

FILTER = 8LPF 300/ 949/ -40
MIN. MAX VALUES = -28.470 45.50 11.55 89.88

A-31
ACCELERATION (G)
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00

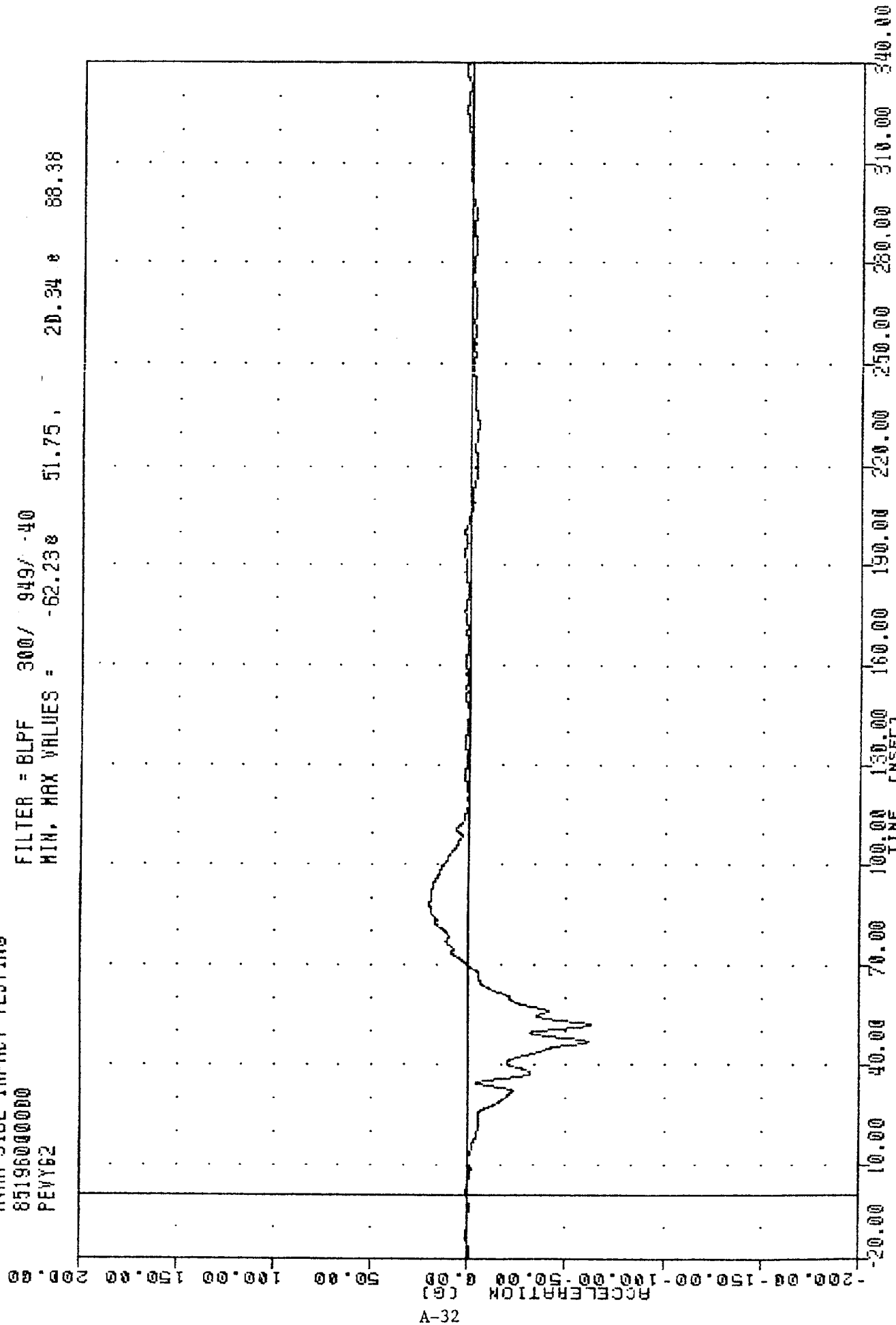


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
PASSENGER PELVIS ACCELERATION X AXIS

TAC , 850715
 MVMA SIDE IMPACT TESTING
 851960000000
 PEVY62

PLOT DATE 23-JUL-85 14:42:25

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -62.238 51.75, 20.34 88.38

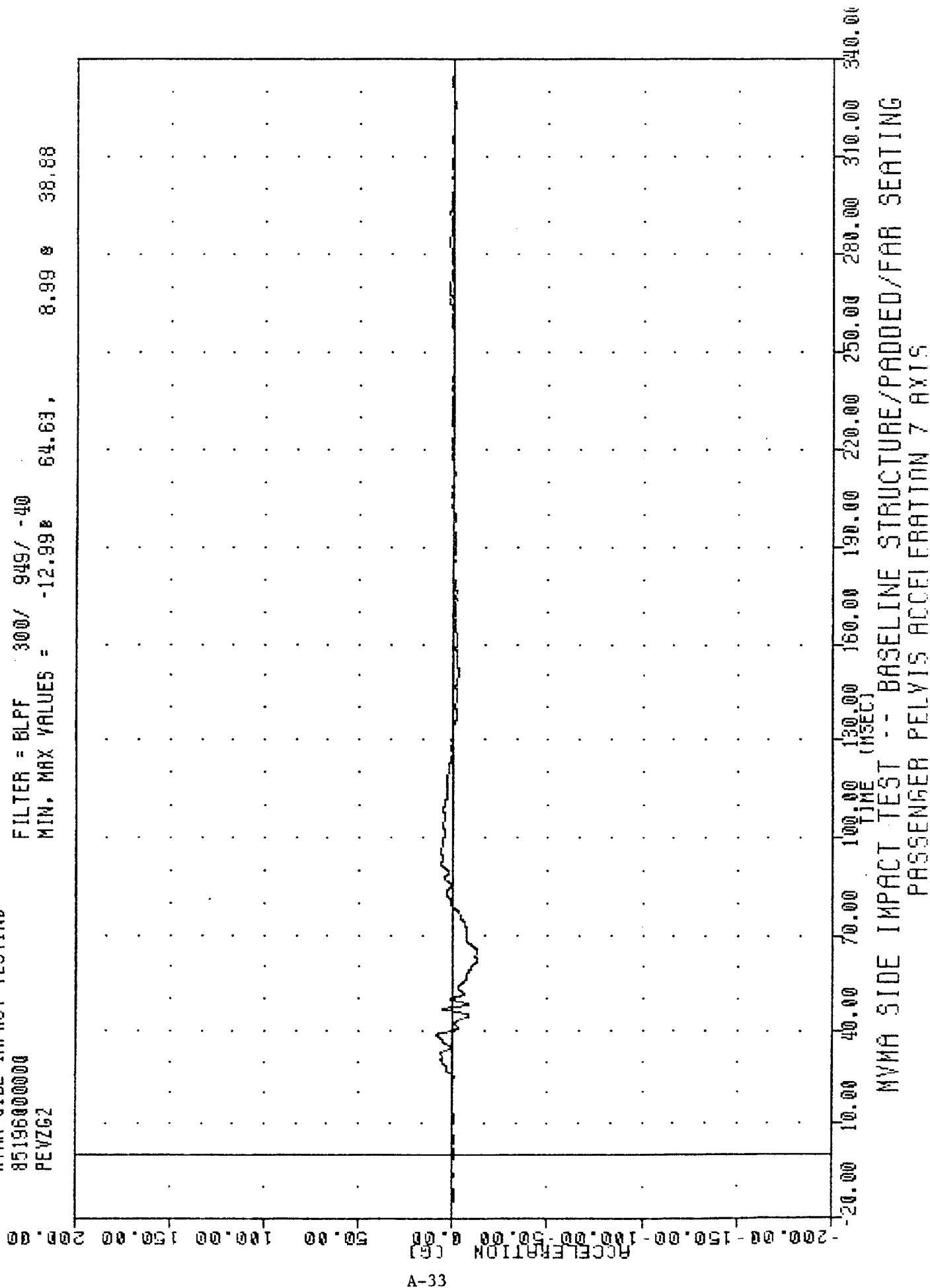


MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 PASSENGER PELVIS ACCELERATION Y AXIS

TRC
 NVMA SIDE IMPACT TESTING
 85196000000
 PEVZG2

PLOT DATE 23-JUL-85 14:42:25

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -12.99 64.63, 8.99 38.88

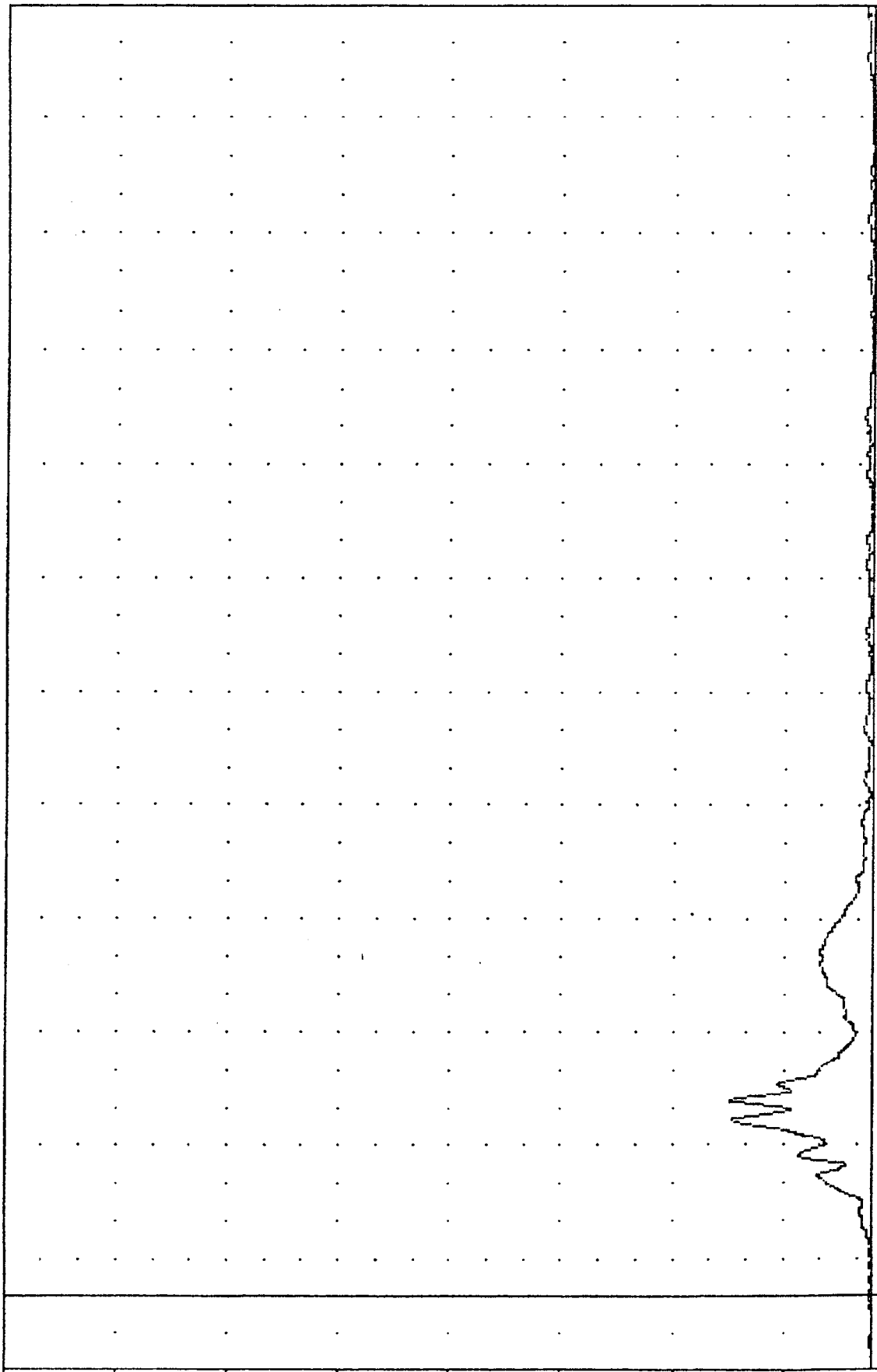


TRC
MVMA SIDE IMPACT TESTING
85196000000
PEYRG2

PLOT DATE 23-JUL-85 14:42:25

FILTER = 8LPF 300/ 949/ -40
MIN, MAX VALUES = 0.09e -15.25, 64.04 e 51.75

ACCELERATION [G]



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME CMSEC

MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
PASSENGER PELVIS RESULTANT ACCELERATION

TRC

, 850715

NVMA SIDE IMPACT TESTING

PLOT DATE 23-JUL-85 15:04:44

85196000000

FILTER = BLPF 300/ 949/ -40

PEVVV2

MIN. MAX VALUES = -25.48 69.63, 0.12 5.38

20.00

10.00

0.00

-10.00

-20.00

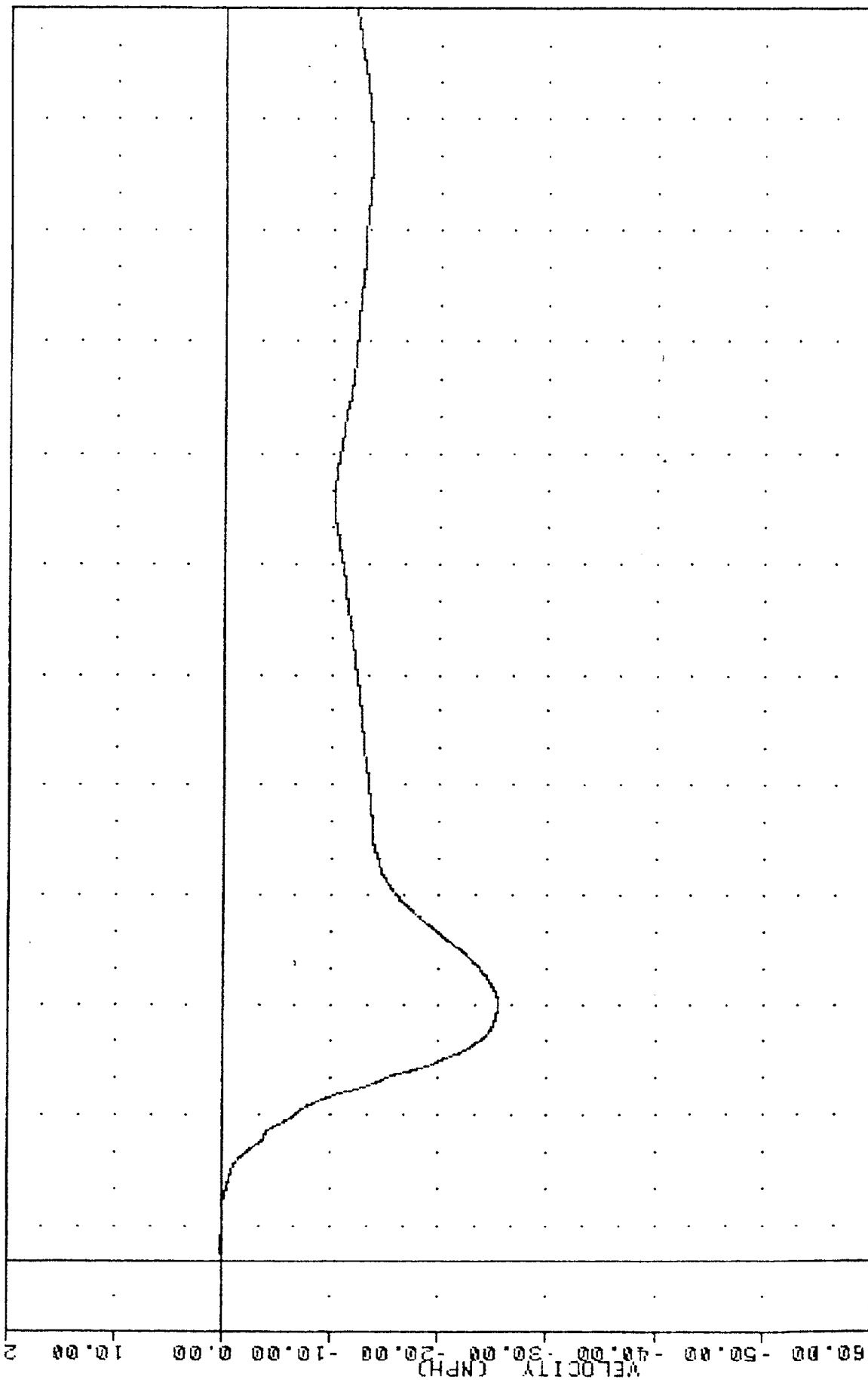
-30.00

-40.00

-50.00

-60.00

A-35



VELOCITY (NPH)

TIME (MSEC)

BASELINE STRUCTURE/PADDED/FAR SEATING

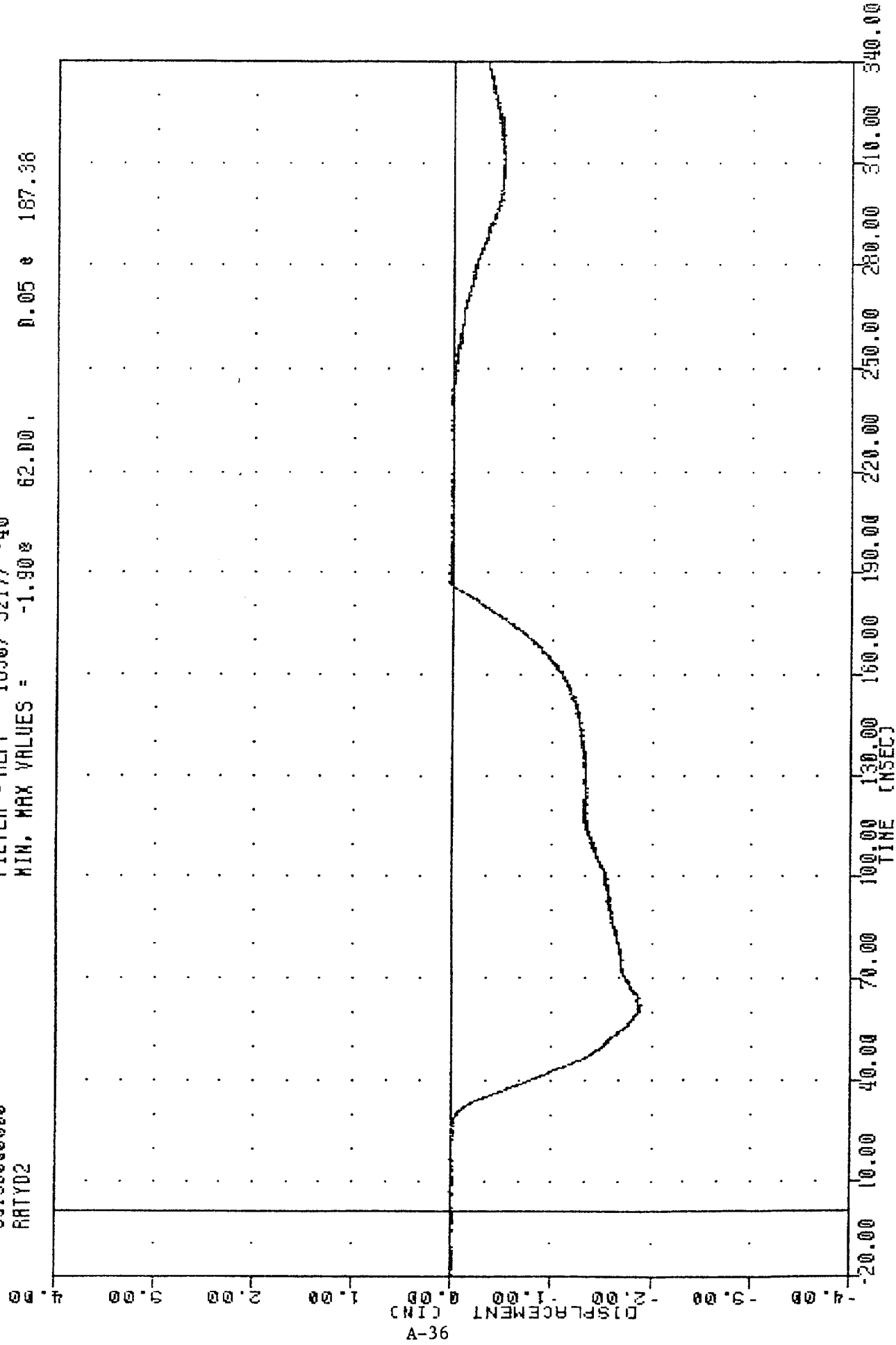
PELVIS VELOCITY Y AXIS

TAC
MVMA SIDE IMPACT TESTING
85196000000
RRTYD2

PLOT DATE 23-JUL-85 14:42:25

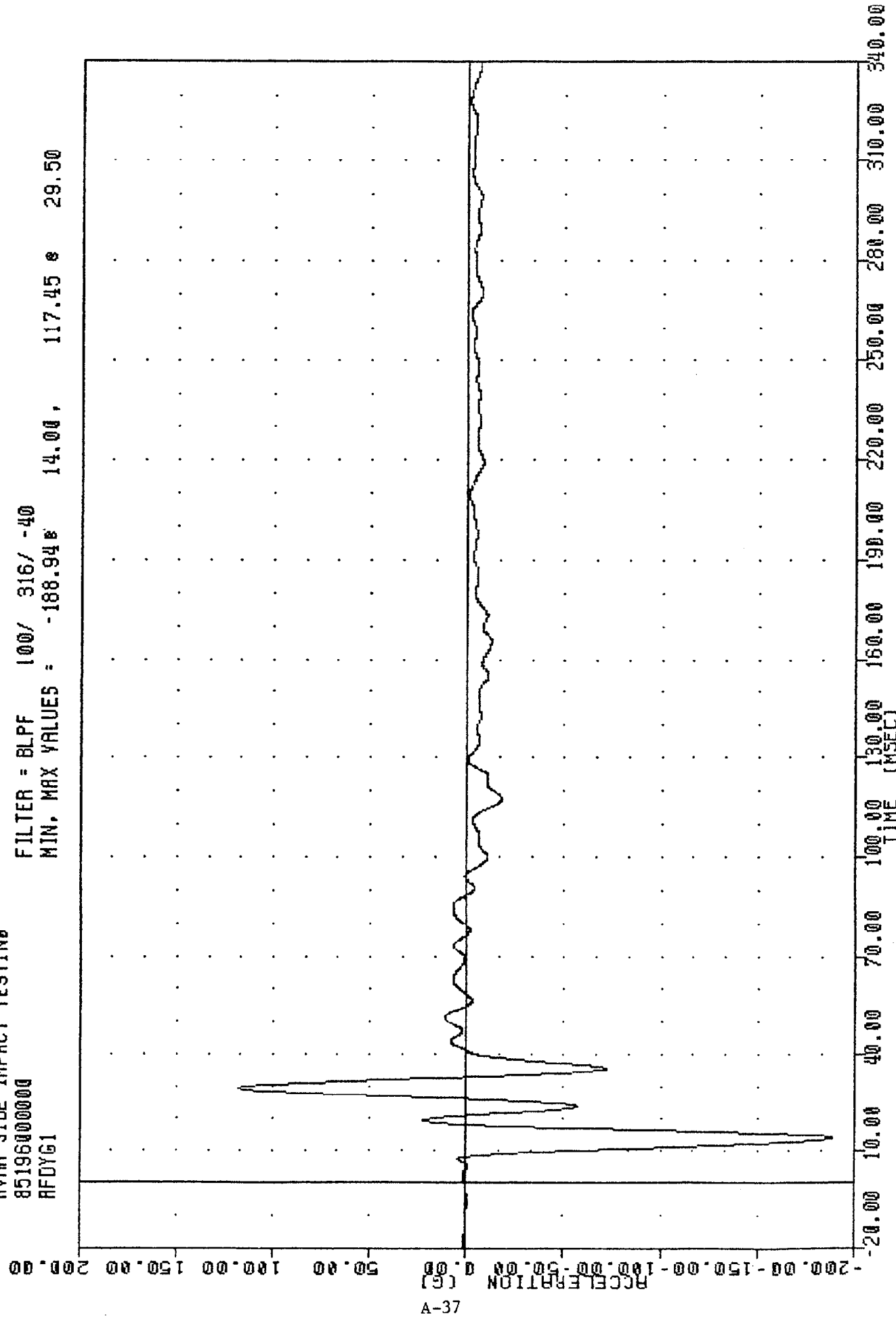
FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -1.908 62.00, 0.05 e 187.36



MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
PASSENGER RIGHT RIB TO SPINE DISPLACEMENT INCHES

TRC 850715
 NVMA SIDE IMPACT TESTING
 85196000000
 RFDY61
 PLOT DATE 29-JUL-85 16:07:02
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -188.948 14.00, 117.45 29.50



MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 VEHICLE RIGHT FRONT DOOR (POSITION 1) ACCELERATION Y AXIS

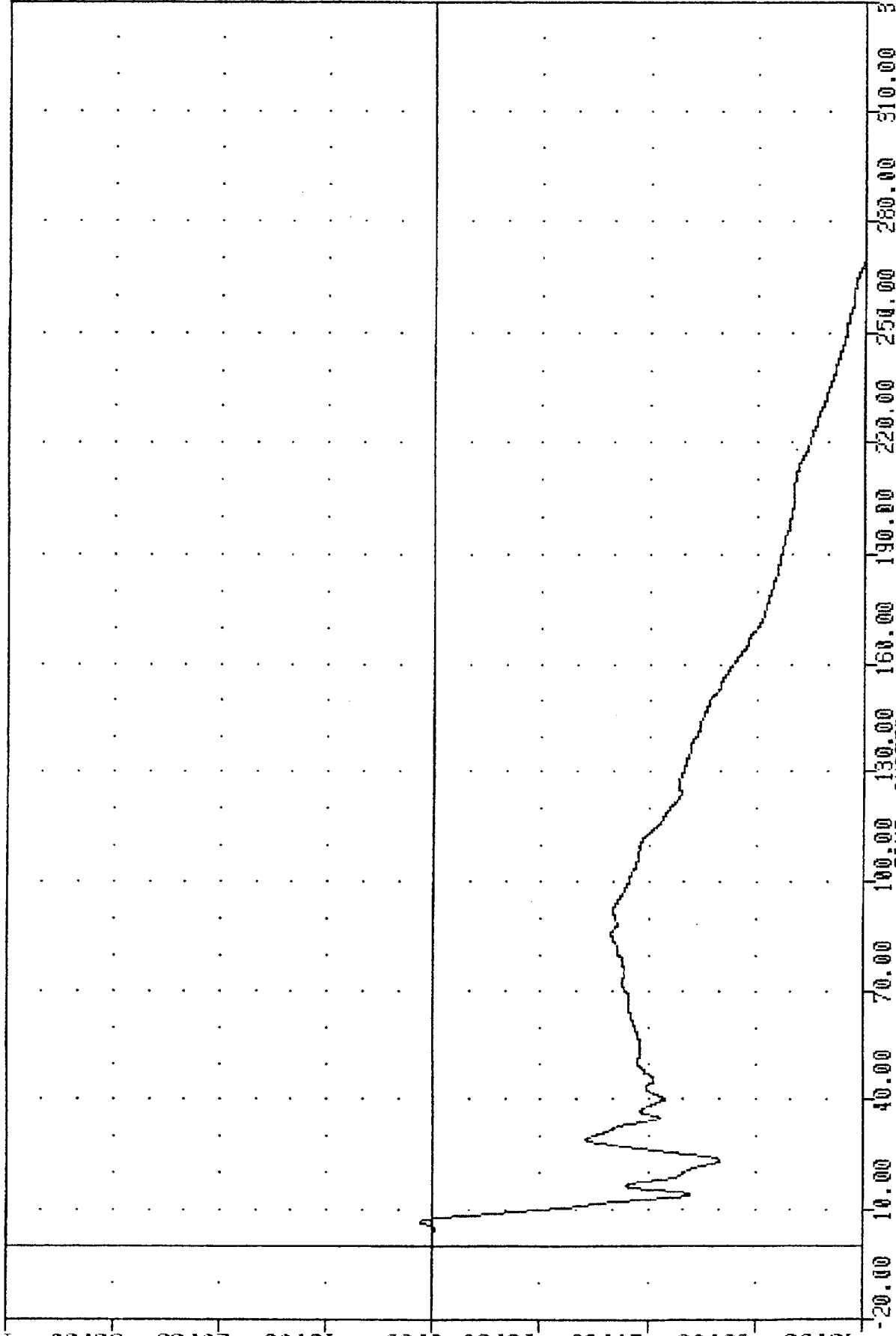
TRC
 MVNA SIDE IMPACT TESTING
 85196000000
 RFDYV1

PLOT DATE 23-JUL-85 15:04:44

FILTER = 6LPF 300/ 949/ -40

MIN. MAX VALUES = -46.358 340.00, 1.19 6.88

85-A
 VELOCITY (MPH)



MVNA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 RIGHT FRONT DOOR POSITION 11 VELOCITY Y AXIS

TRC

, 850715

MVMA SIDE IMPACT TESTING

85196000000

RFOY62

PLOT DATE

23-JUL-85

14:42:25

FILTER = BLPF

100/ 316/ -40

MIN. MAX VALUES =

-67.95e

10.50.

45.46 e

29.25

100.00

50.00

0.00

-50.00

-100.00

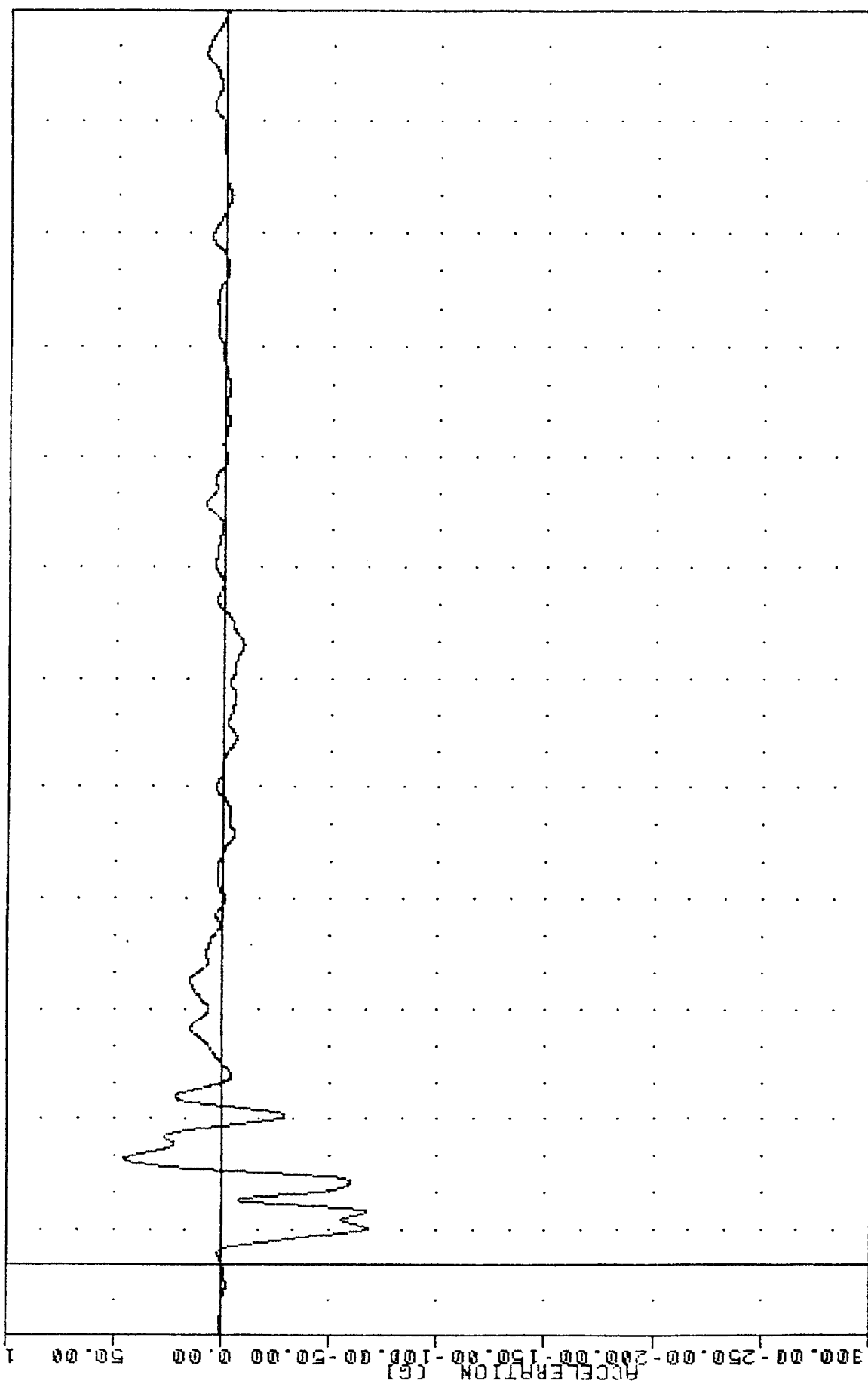
-150.00

-200.00

-250.00

-300.00

A-39



0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
VEHICLE RIGHT FRONT DOOR (POSITION 2) ACCELERATION Y AXIS

TAC , 850715
MVMA SIDE IMPACT TESTING
85196000000
RFDYY2

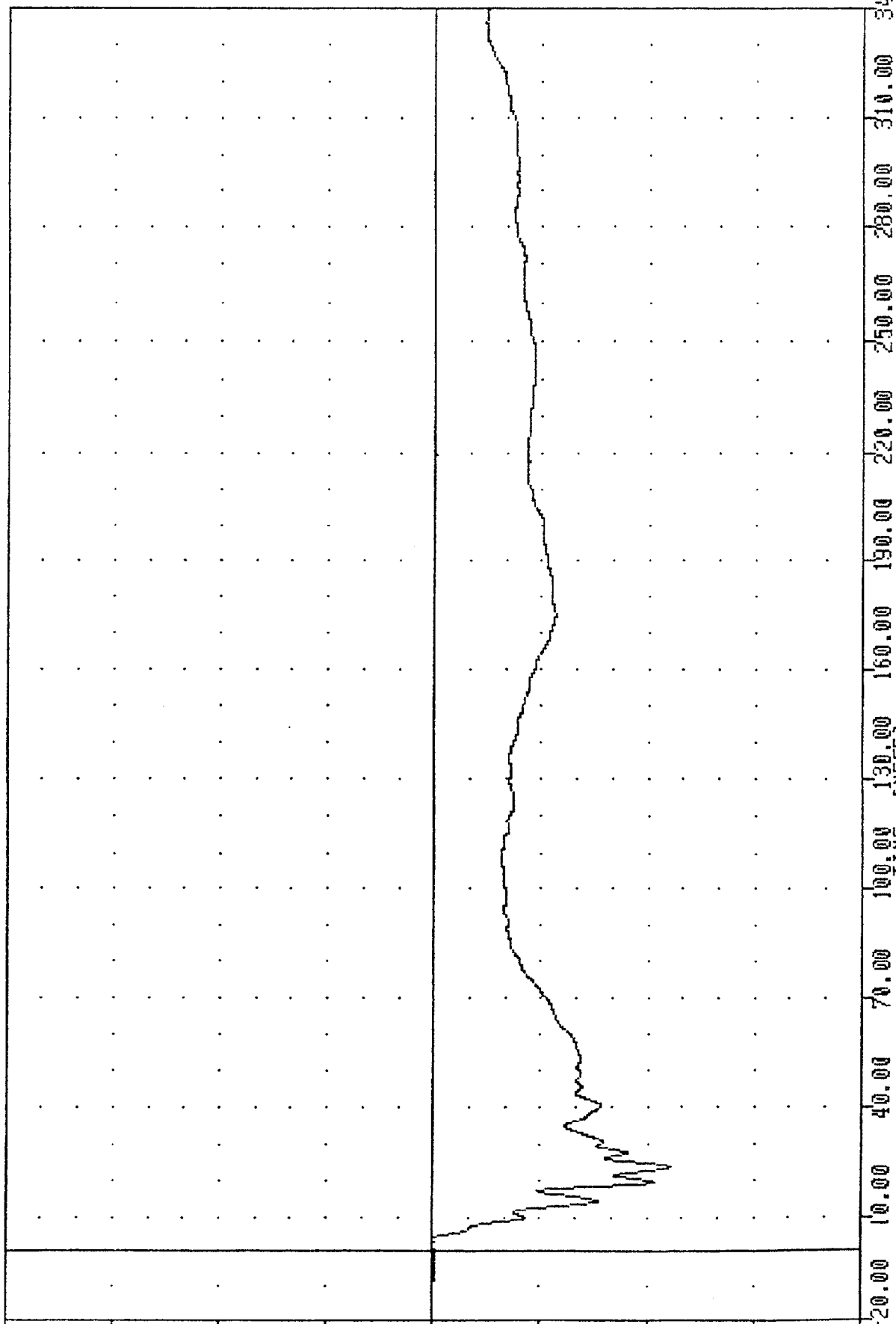
PLOT DATE 23-JUL-85 15:04:44

FILTER = BLPF 300/ 949/ .40

MIN, MAX VALUES = -22.12e 23.50 , 0.10 e -12.50

VELOCITY (IN/SEC)

A-40



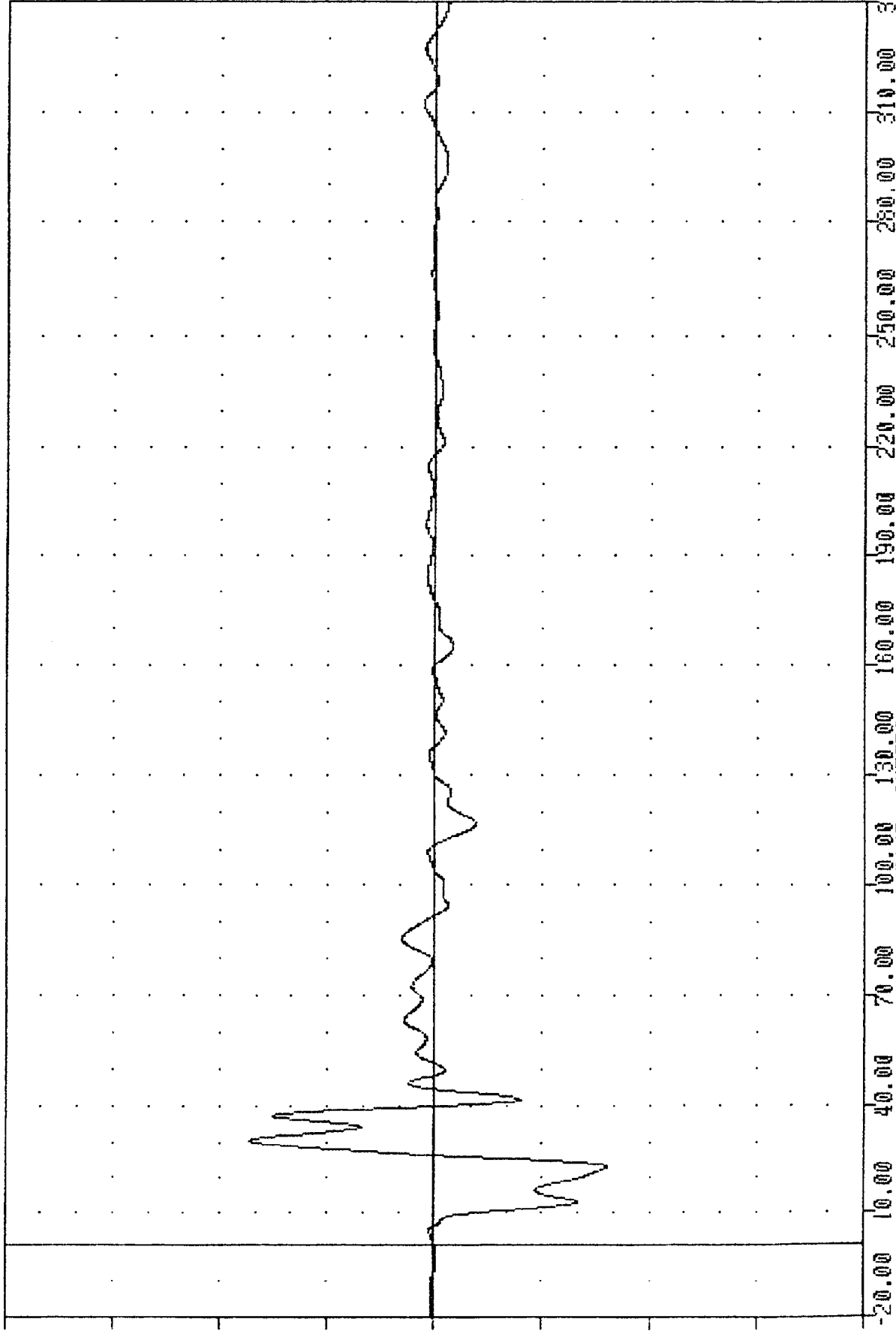
MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
RIGHT FRONT DOOR (POSITION 2) VELOCITY Y AXIS

TAC , 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 RFDY63

PLOT DATE 23-JUL-85 14:42:25

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -80.55 85.85 30.38

A-41
 ACCELERATION (G)
 -200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00



MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 VEHICLE RIGHT FRONT DOOR (POSITION 3) ACCELERATION Y AXIS

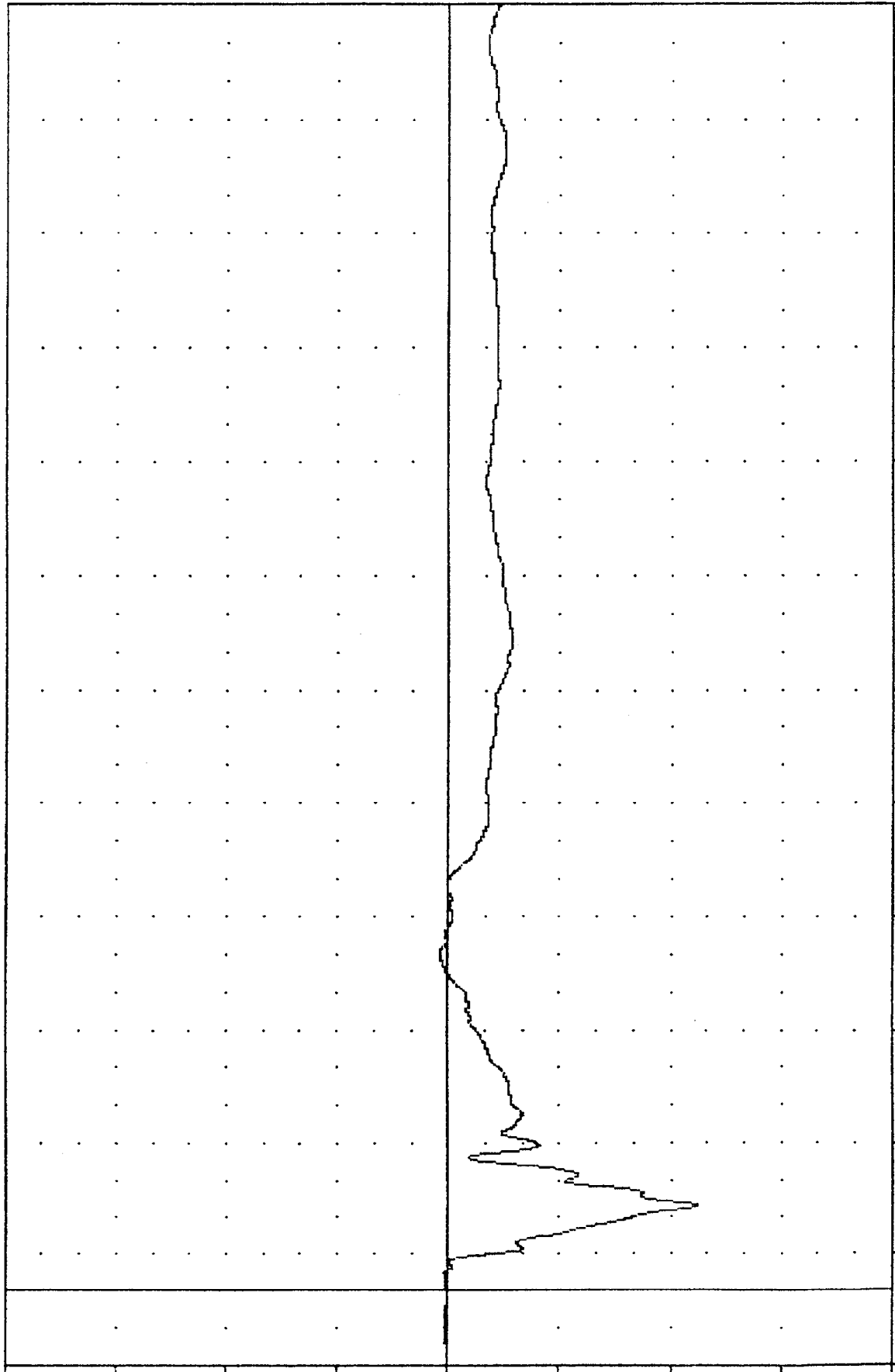
TAC , 850715
 NVMA SIDE IMPACT TESTING
 85195000000
 RFDYV3

PLOT DATE 23-JUL-85 15:04:44

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -22.398 22.88, 0.68 90.50

VELOCITY (IN/MS)



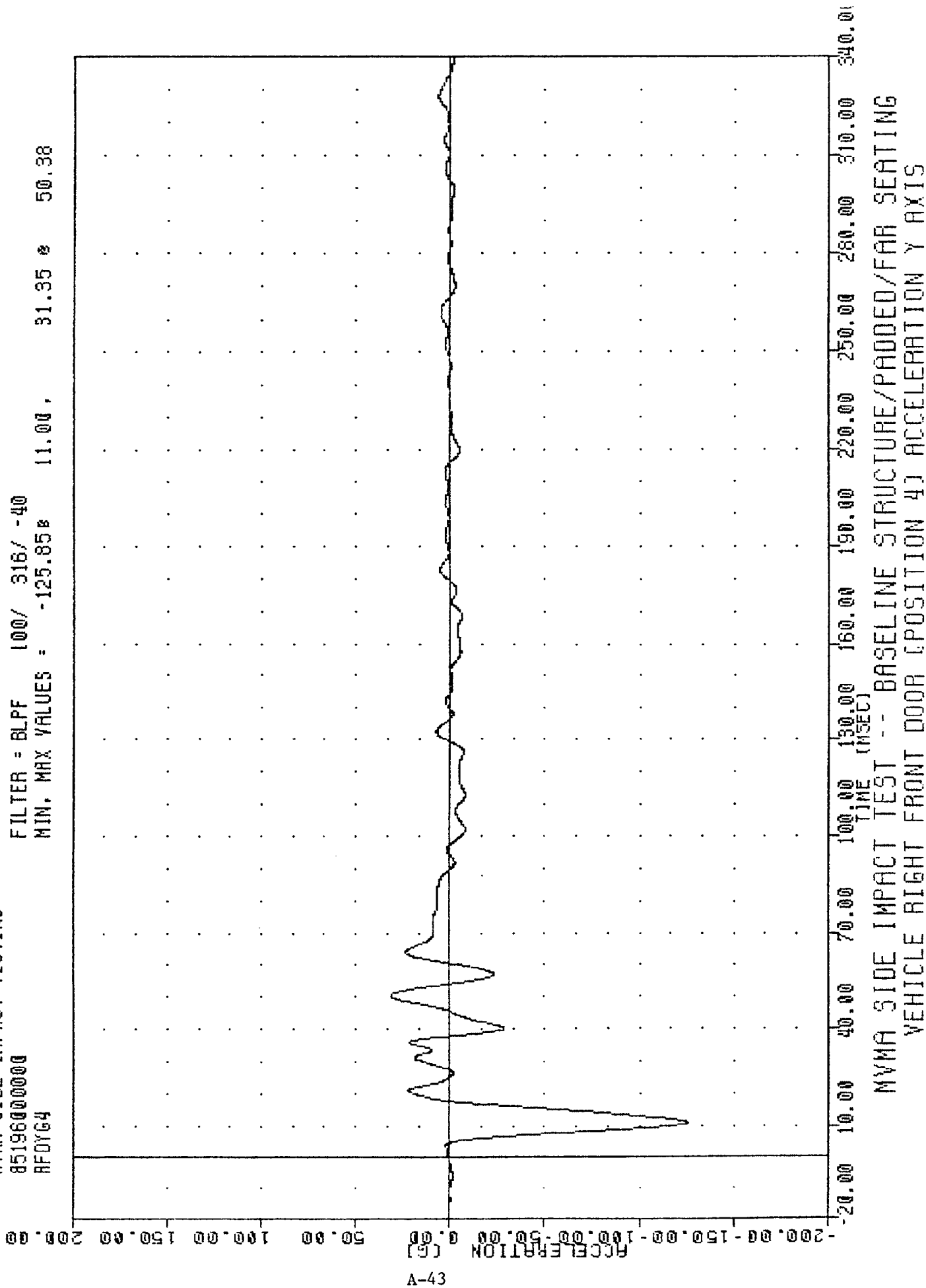
TIME (MSEC)

NVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 RIGHT FRONT DOOR (POSITION 3) VELOCITY Y AXIS

THC , 850715
 NVMA SIDE IMPACT TESTING
 85196000000
 RFDY64

PLOT DATE 23-JUL-85 14:42:25

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -125.85% 11.00, 31.35 % 50.38

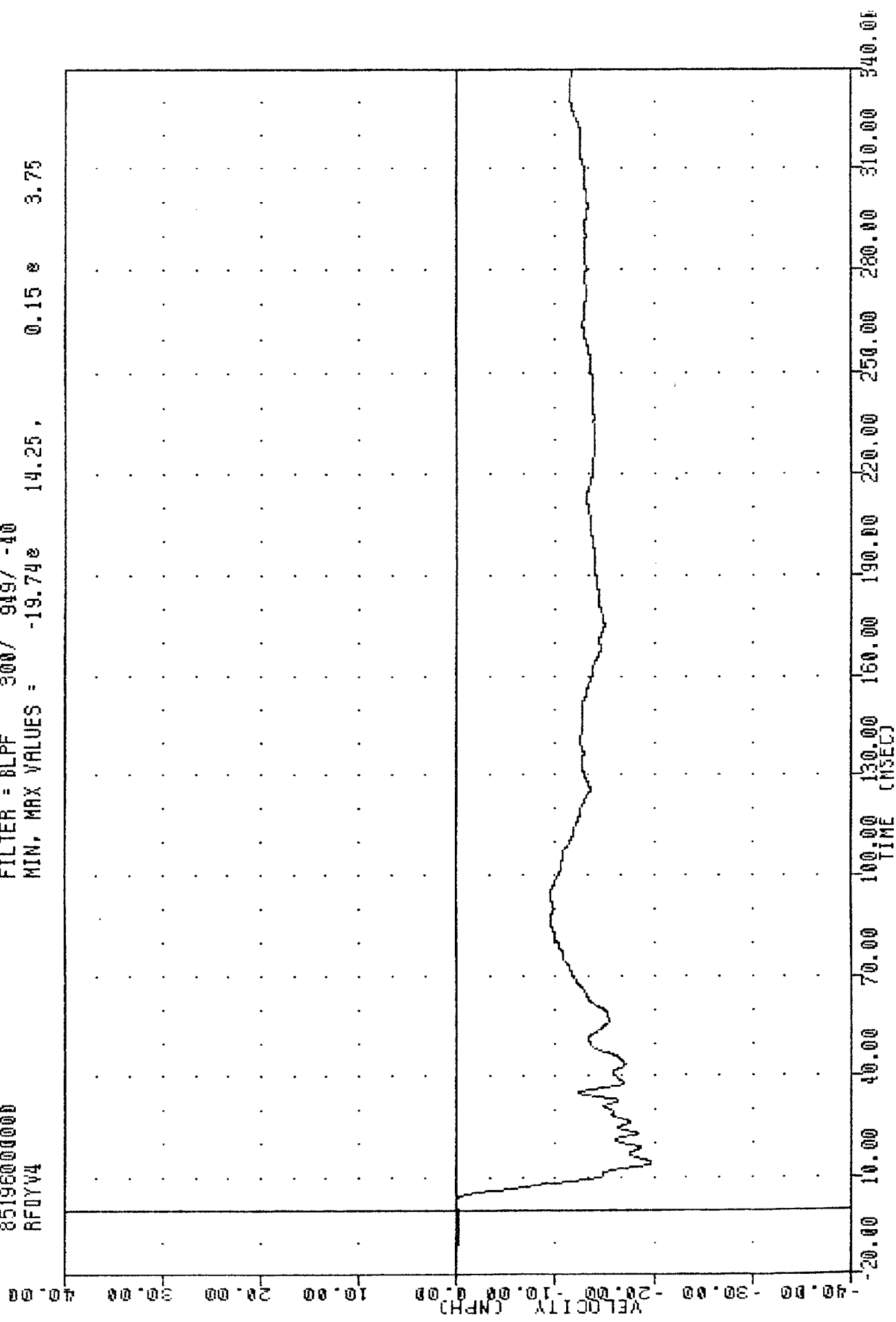


NVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 VEHICLE RIGHT FRONT DOOR (POSITION 4) ACCELERATION Y AXIS

TRC
 MVNA SIDE IMPACT TESTING
 85196000000
 RFDYV4

850715 23-JUL-85 15:04:44

FILTER = 6LPF 300/ 949/ -40
 MIN, MAX VALUES = -19.74e 0.15 e 3.75



TRC

, 850715

MYMA SIDE IMPACT TESTING

PLOT DATE

23-JUL-85

14:42:25

85196000000

LF3XG

FILTER = BLFF

100/

316/

-40

MIN, MAX VALUES =

-6.29%

23.25,

1.89%

59.63

ACCELERATION [G]

40.00

30.00

20.00

10.00

0.00

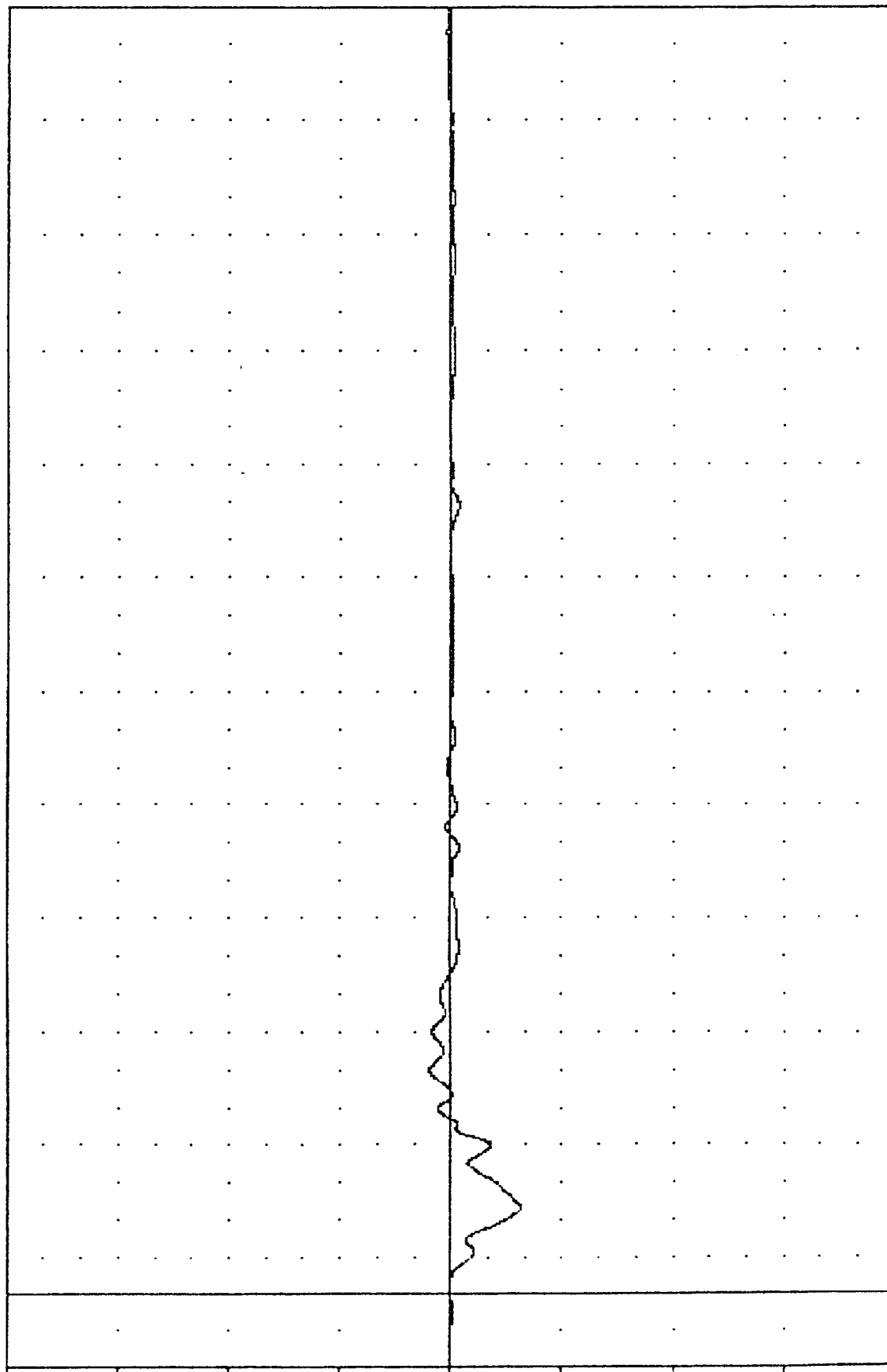
-10.00

-20.00

-30.00

-40.00

A-45



TIME [MSEC]

-20.00

10.00

40.00

70.00

100.00

130.00

160.00

190.00

220.00

250.00

280.00

310.00

340.00

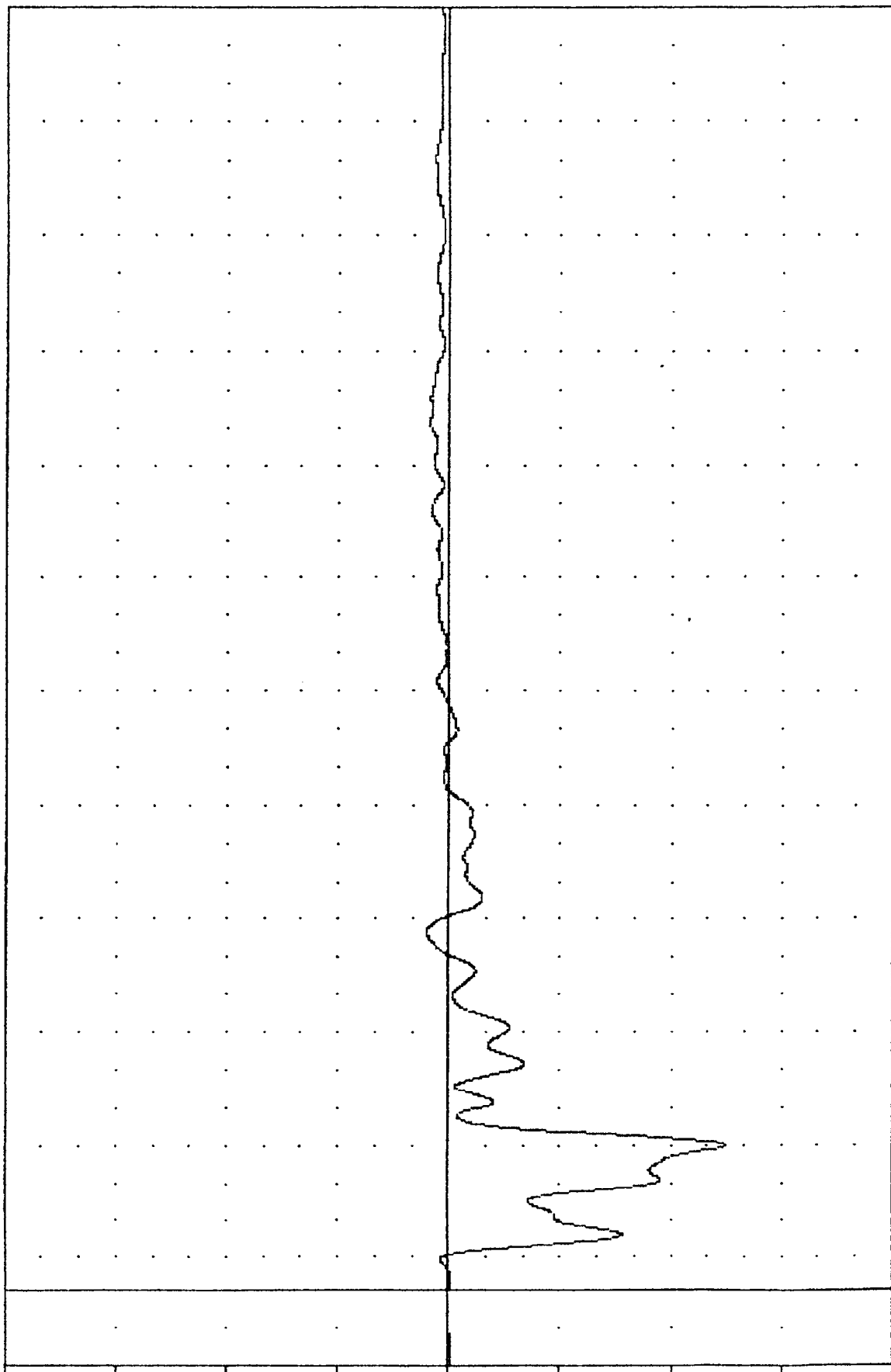
MYMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
VEHICLE LEFT FRONT SILL ACCELERATION X AXIS

TRC
MVMA SIDE IMPACT TESTING
85196000000
LFSY6

PLOT DATE 23-JUL-85 14:42:25

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -24.97 40.00 1.99 96.38

94-A
ACCELERATION [G]
-40.00
-30.00
-20.00
-10.00
0.00
10.00
20.00
30.00
40.00

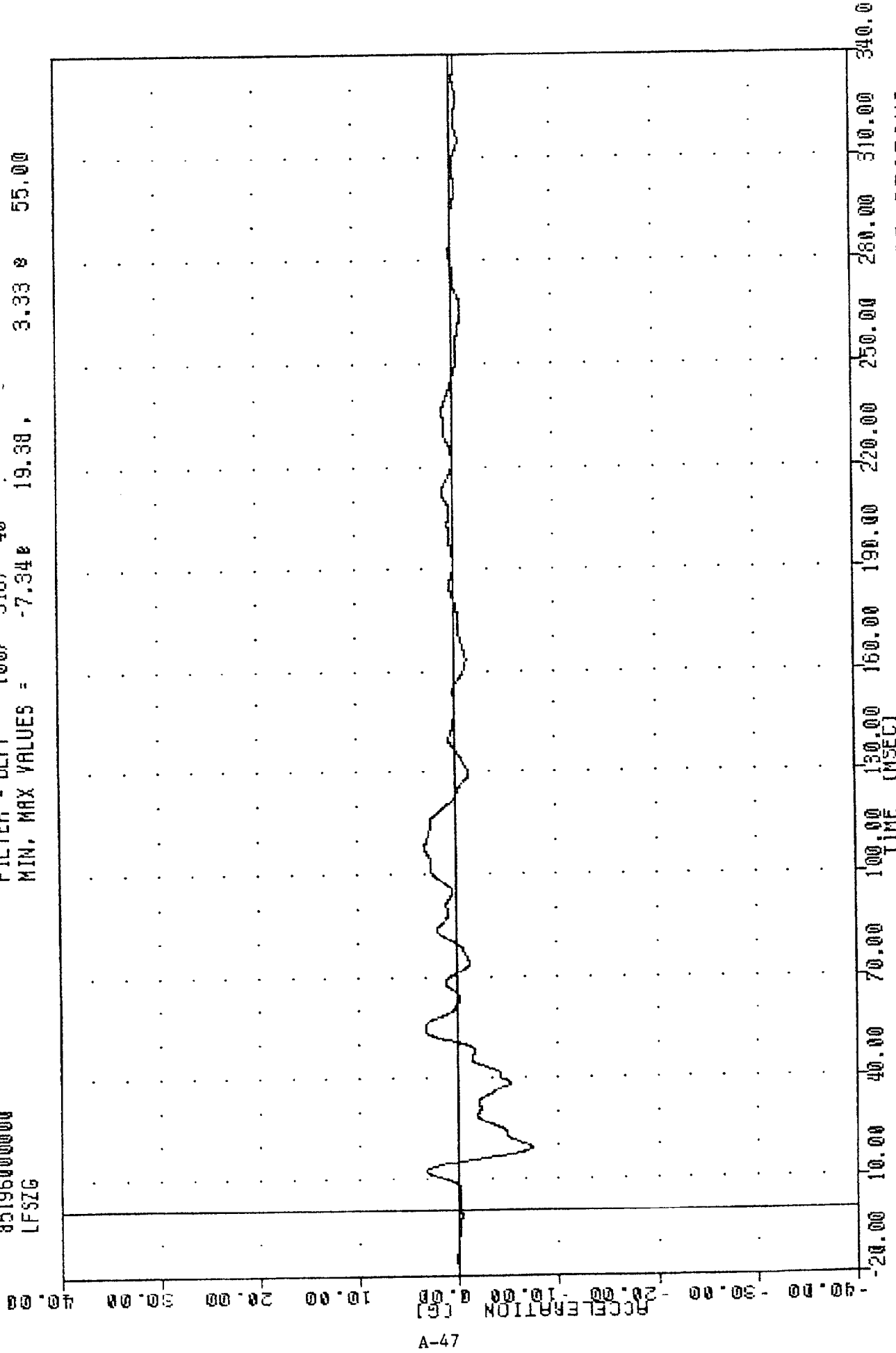


TIME [MSEC] 340.00 310.00 280.00 250.00 220.00 190.00 160.00 130.00 100.00 70.00 40.00 10.00 -20.00
MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
VEHICLE LEFT FRONT SILL ACCELERATION Y AXIS

TRC
 NVMA SIDE IMPACT TESTING
 85196000000
 LFSZG

PLOT DATE 23-JUL-63 14:42:23

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -7.34e 3.33 e 55.00



MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 VEHICLE LEFT FRONT SILL ACCELERATION Z AXIS

TRC 850715

MVMA SIDE IMPACT TESTING

85196000000

LF3RG

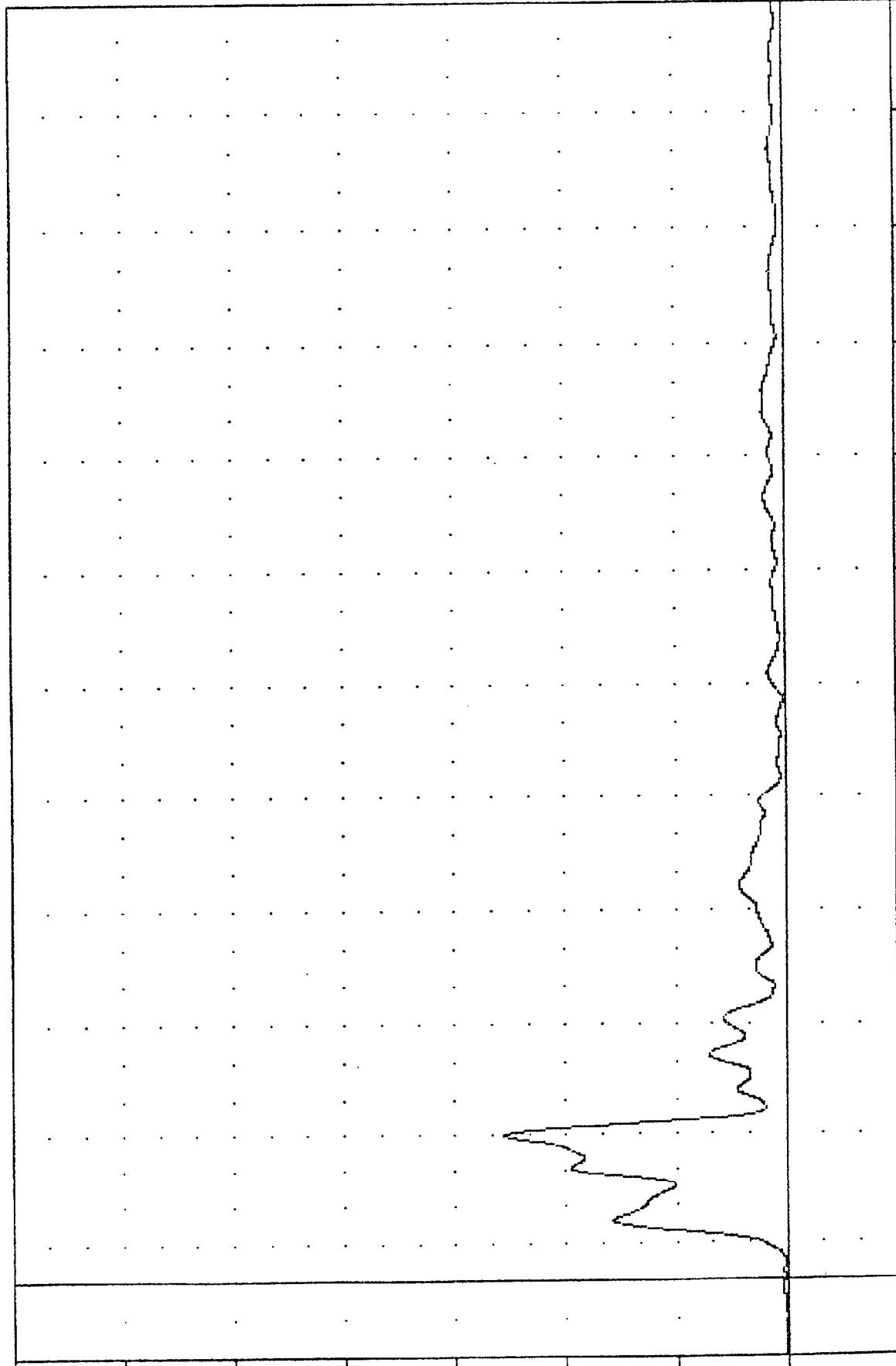
PLOT DATE 23-JUL-85

14:42:25

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = 0.028 -9.75, 25.59 & 39.88

ACCELERATION (G)



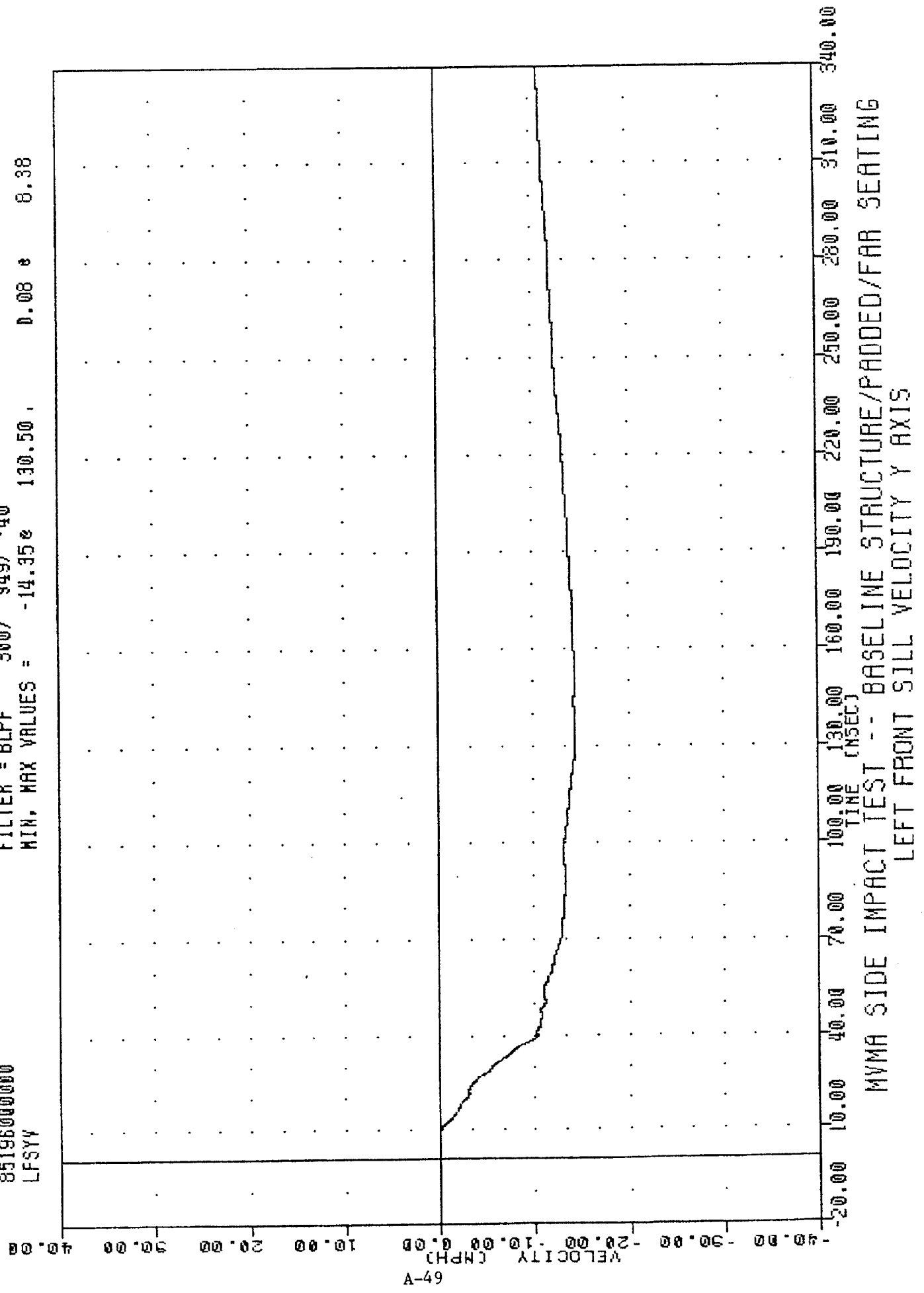
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
VEHICLE LEFT FRONT SILL RESULTANT

TAC , 850715
 MVMA SIDE IMPACT TESTING
 851950000000
 LFSYV

PLUT DATE 23-JUL-85 15:04:44

FILTER = BLPF 300/ 949/ .40
 MIN, MAX VALUES = -14.35e 130.50 , 0.08 e 8.38



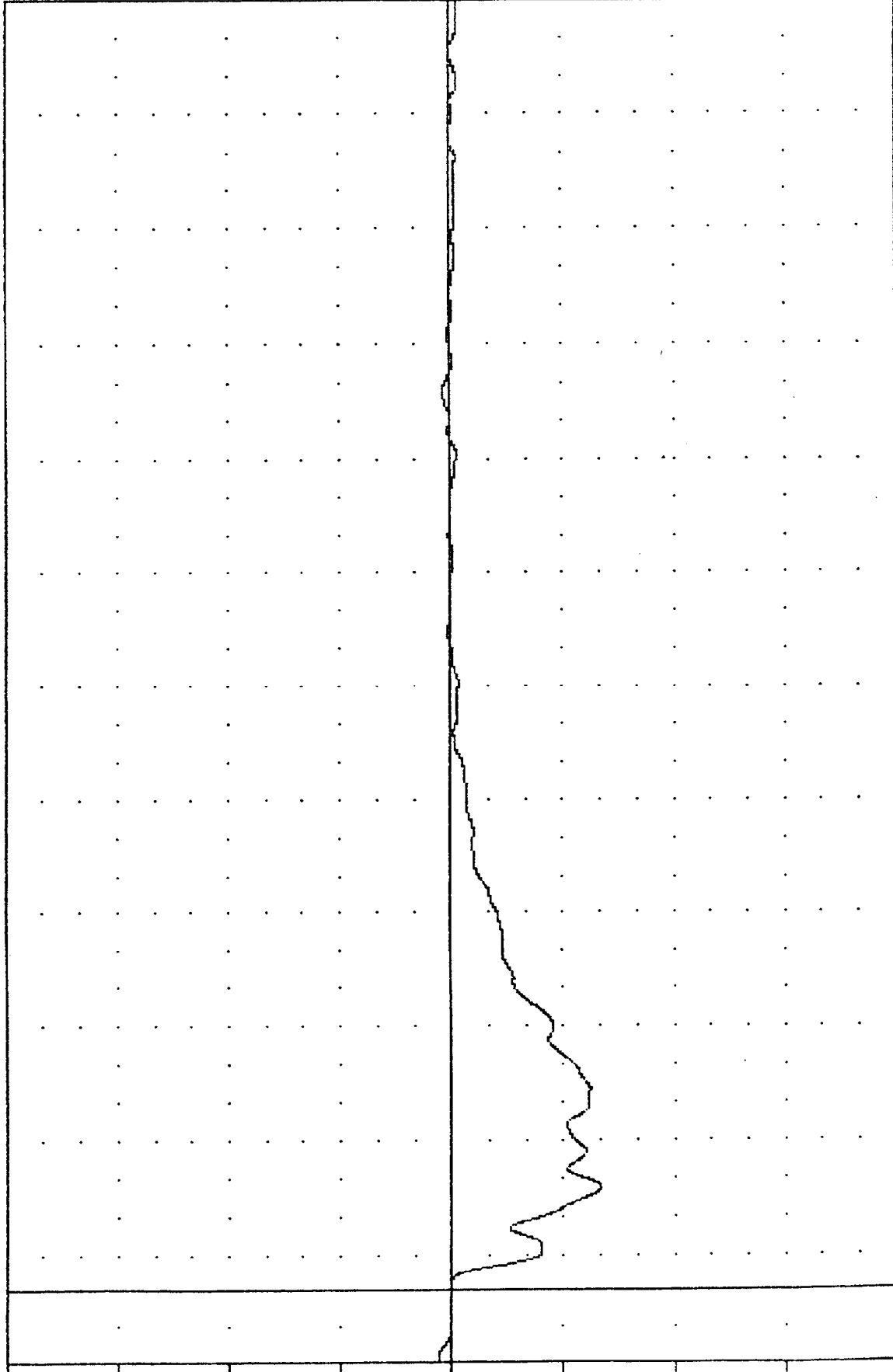
TAC , 850715
MVMA SIDE IMPACT TESTING
85196000000
BCGX6

PLOT DATE 23-JUL-85 14:42:25

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -13.39 27.50, 1.10 e -20.00

05-A
ACCELERATION (G)
-40.00
-30.00
-20.00
-10.00
0.00
10.00
20.00
30.00
40.00



20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)

MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADOED/FAR SEATING
BARRIER CENTER OF GRAVITY X AXIS

TFC

800715

PLOT DATE

23-JUL-85

14:42:25

NYMA SIDE IMPACT TESTING

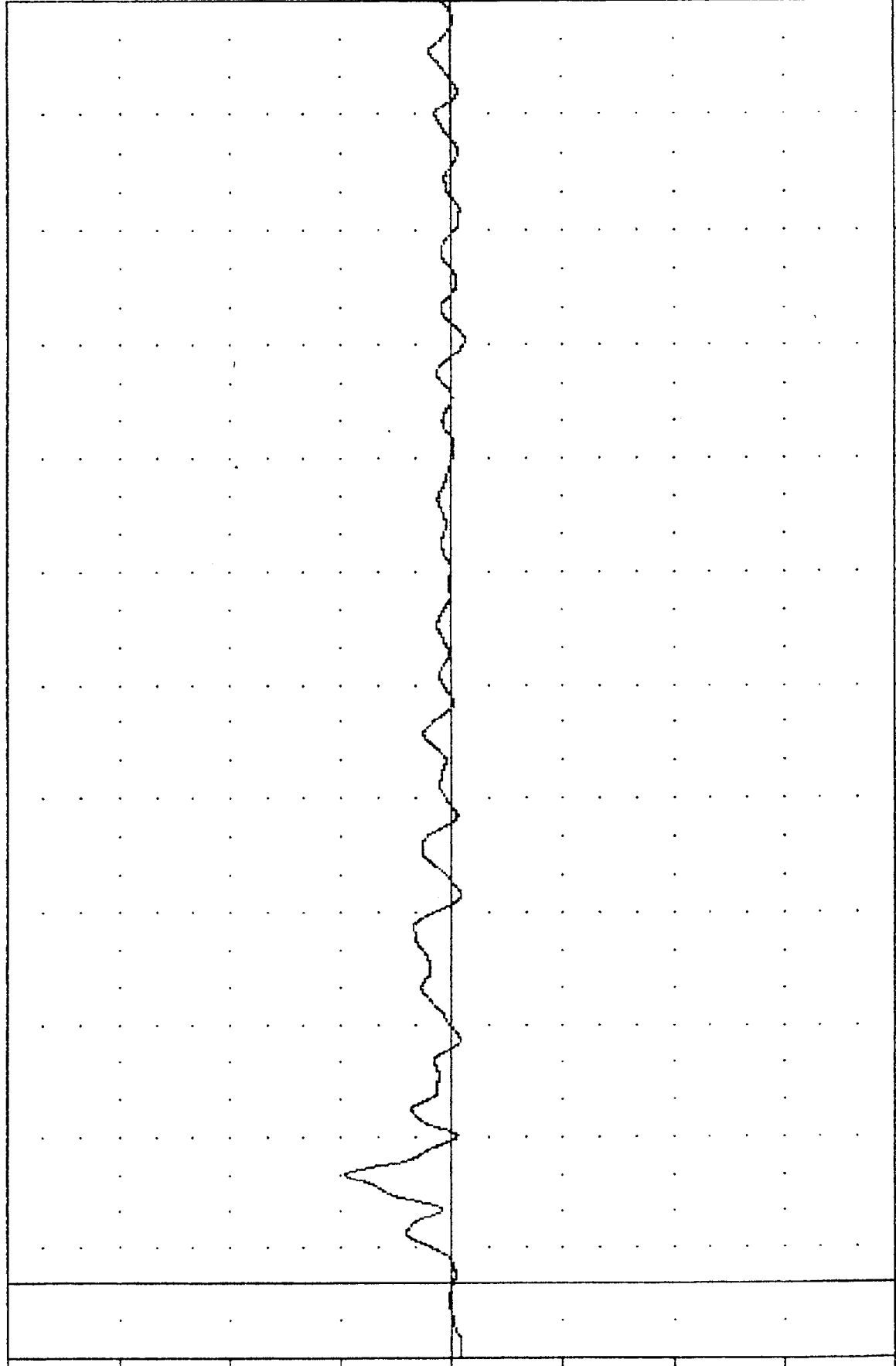
85195000000

BCGYG

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -1.18e 251.38, 9.61 e 30.25

15-A
ACCELERATION (G)
-40.00
-30.00
-20.00
-10.00
0.00
10.00
20.00
30.00
40.00



NYMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
BARRIER CENTER OF GRAVITY Y AXIS

TRC
MVNA SIDE IMPACT TESTING
85196000000
BCGZG

PLOT DATE 23-JUL-85 14:42:25

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -6.75 40.38 , 8.83 47.25

40.00

30.00

20.00

10.00

0.00

-10.00

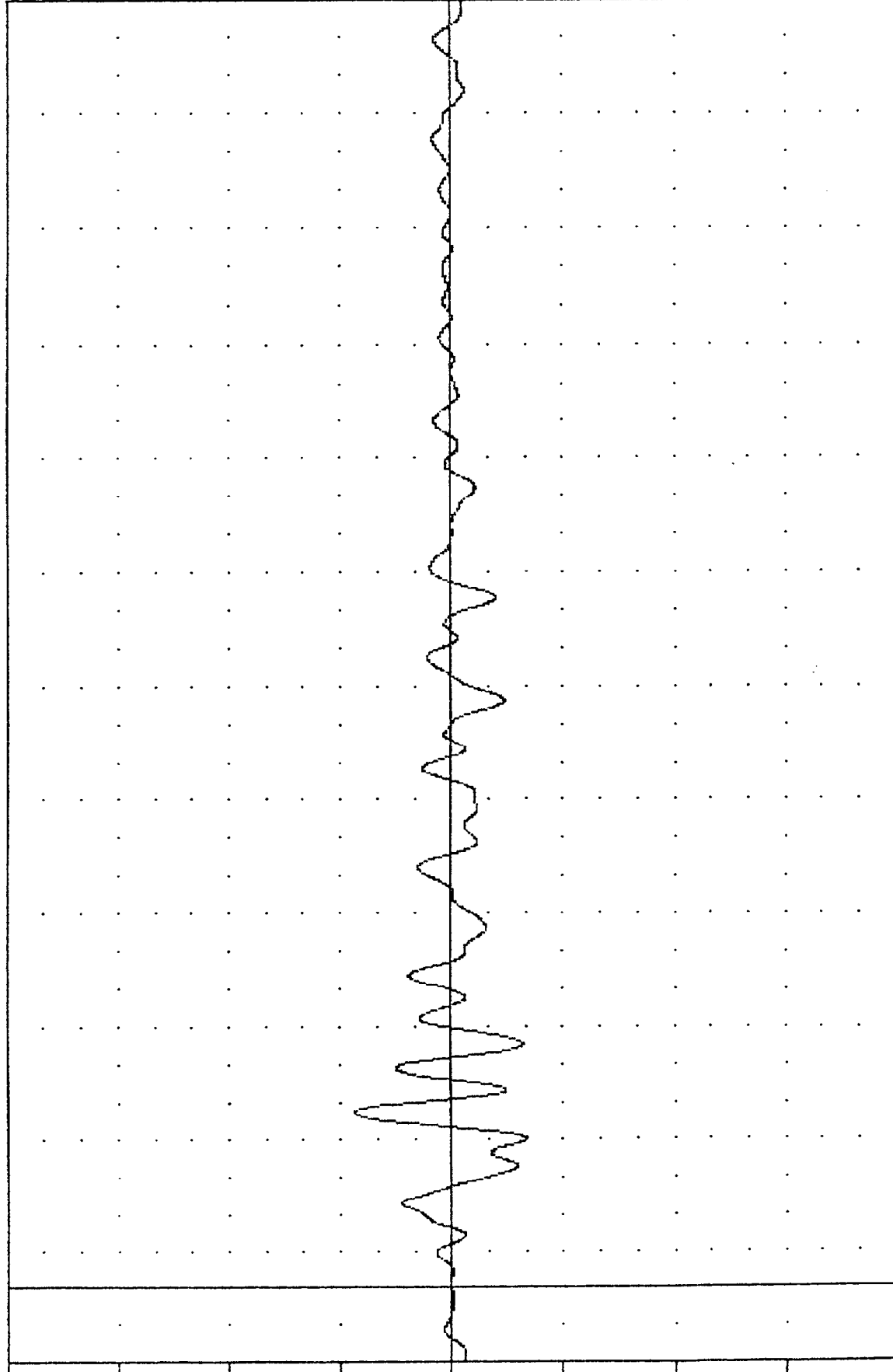
-20.00

-30.00

-40.00

A-52

ACCELERATION [G]



TIME CMSEC

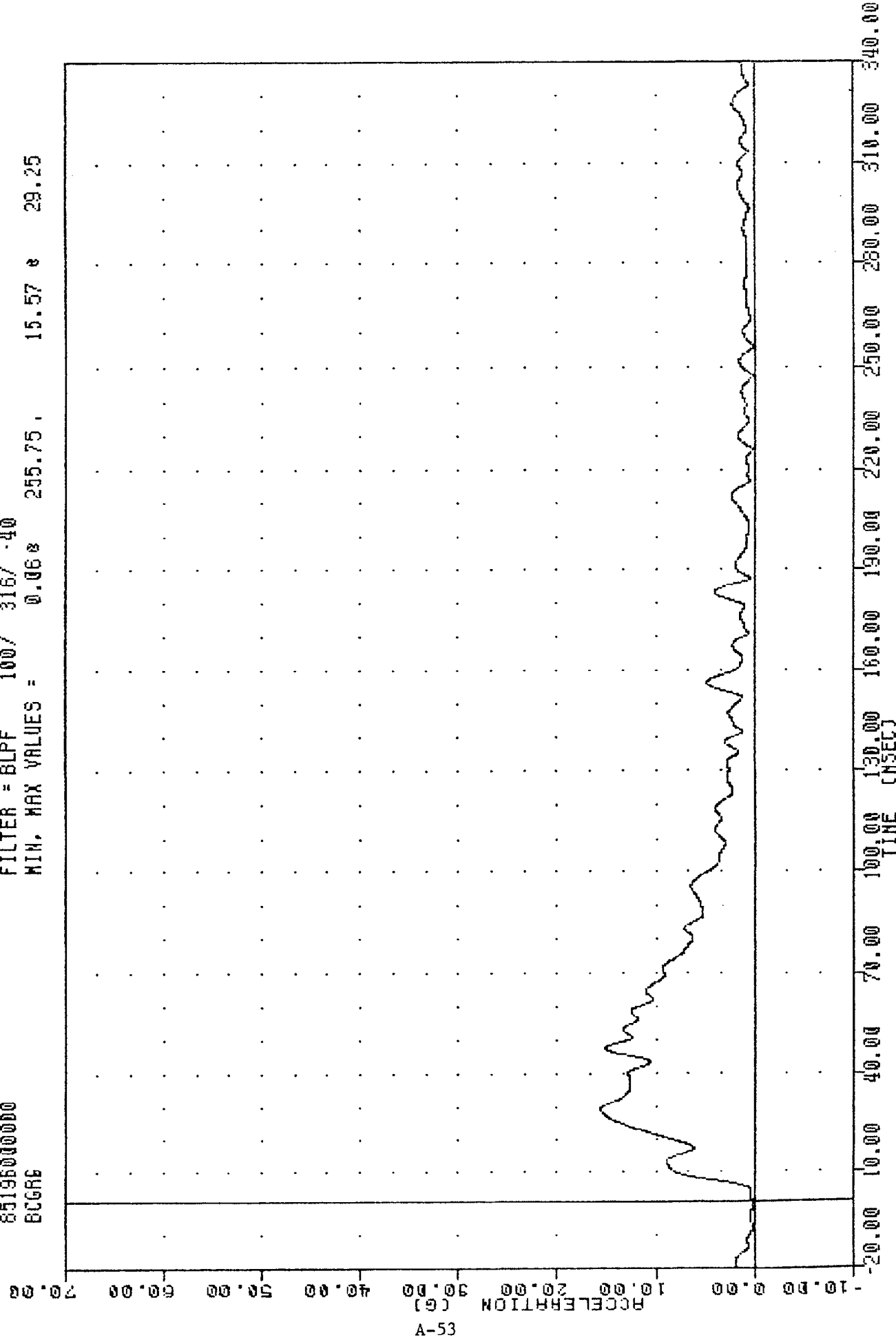
-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MVNA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
BARRIER CENTER OF GRAVITY Z AXIS

TRC , 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 BCGRG

PLOT DATE 23-JUL-85 14:42:25

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = 0.068 255.75, 15.57 & 29.25

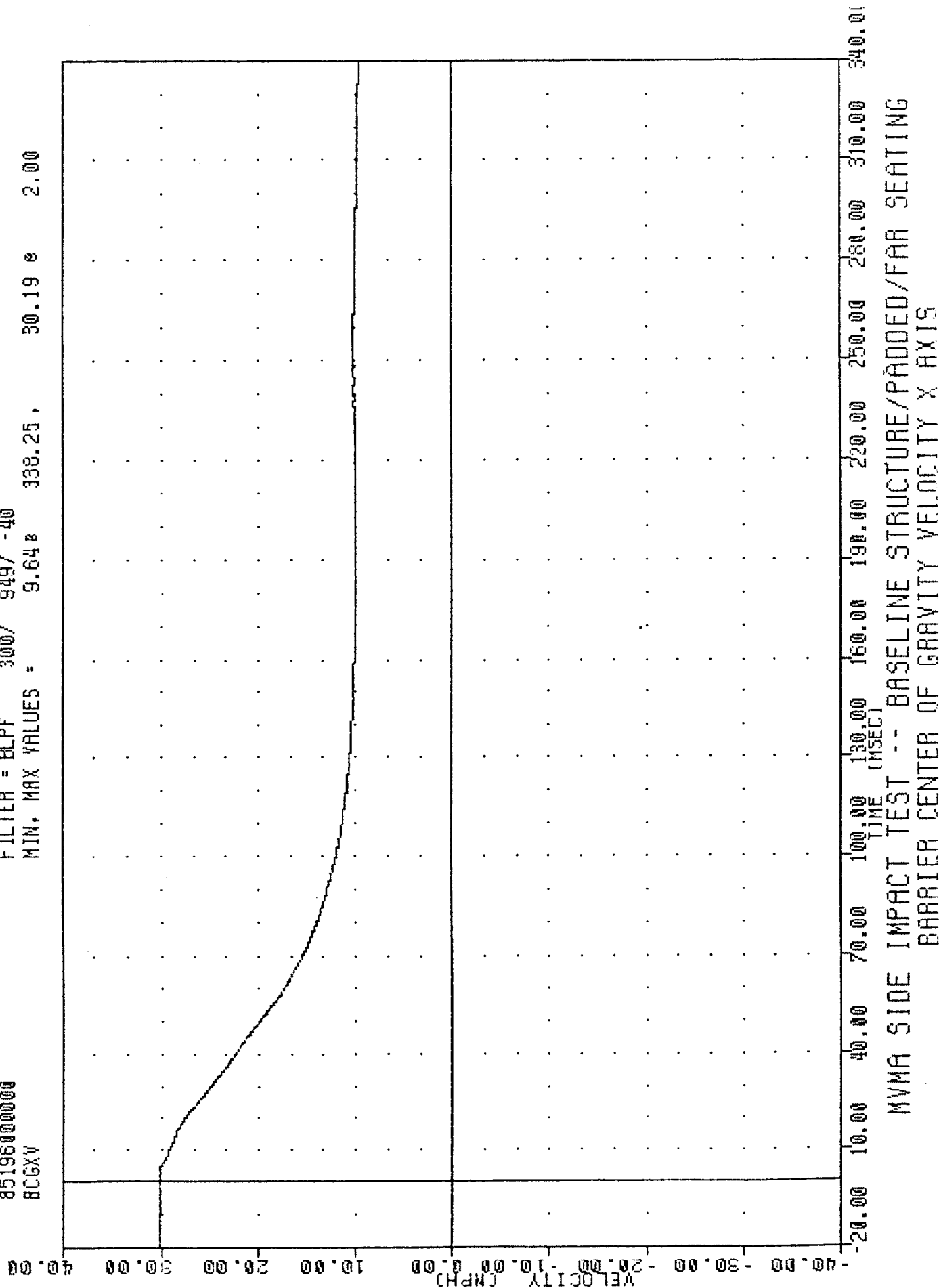


MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 BARRIER CENTER OF GRAVITY RESULTANT ACCELERATION

TRC , 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 BCGXY

PLOT DATE 23-JUL-85 15:04:44

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 9.640 338.25, 30.19 2.00

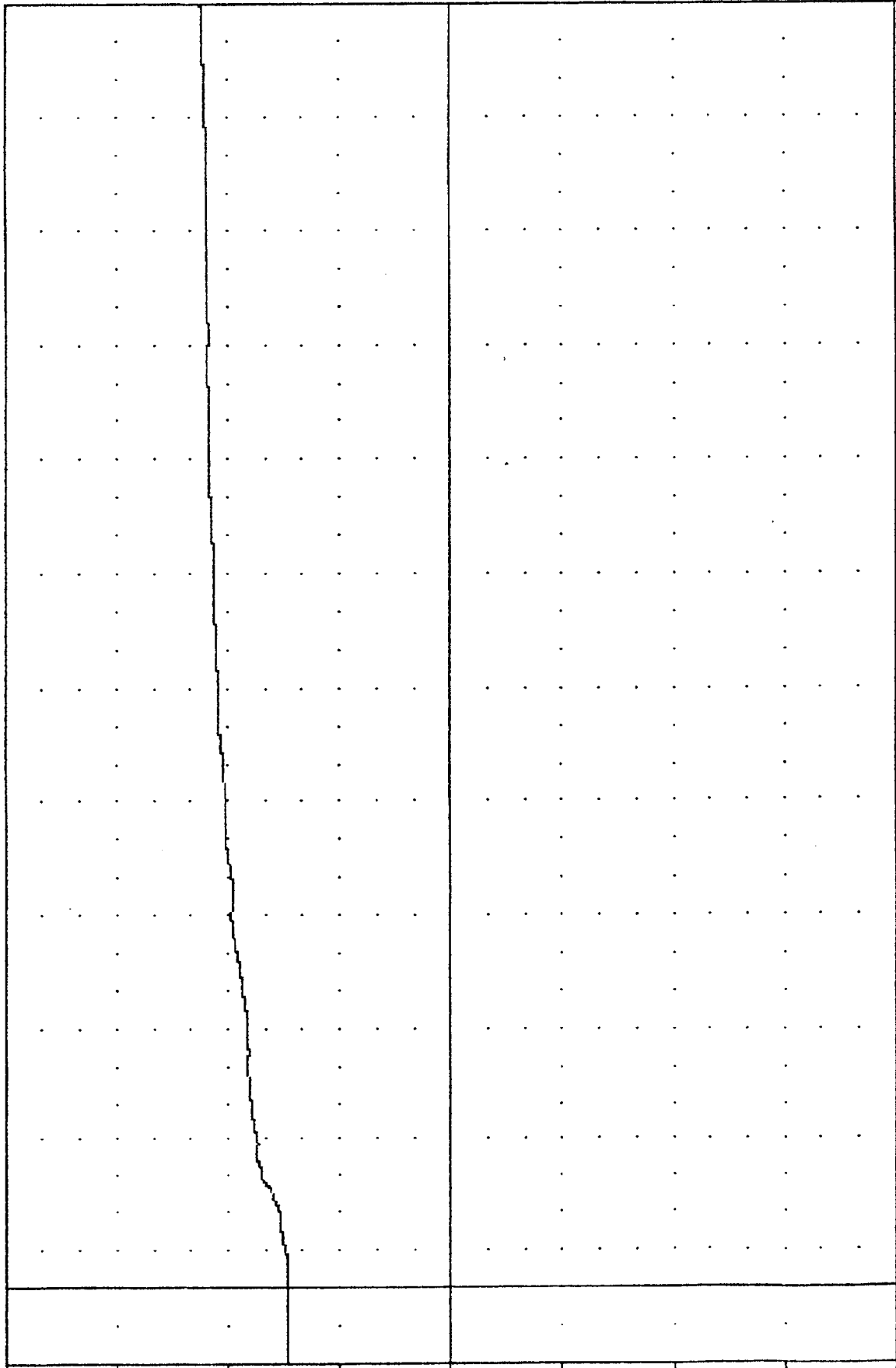


TRC , 850715
 MVNA SIDE IMPACT TESTING
 85196000000
 BCGYV

PLOT DATE 23-JUL-85 15:04:44

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 14.618 -12.25, 22.46 & 340.00

VELOCITY (MPH)



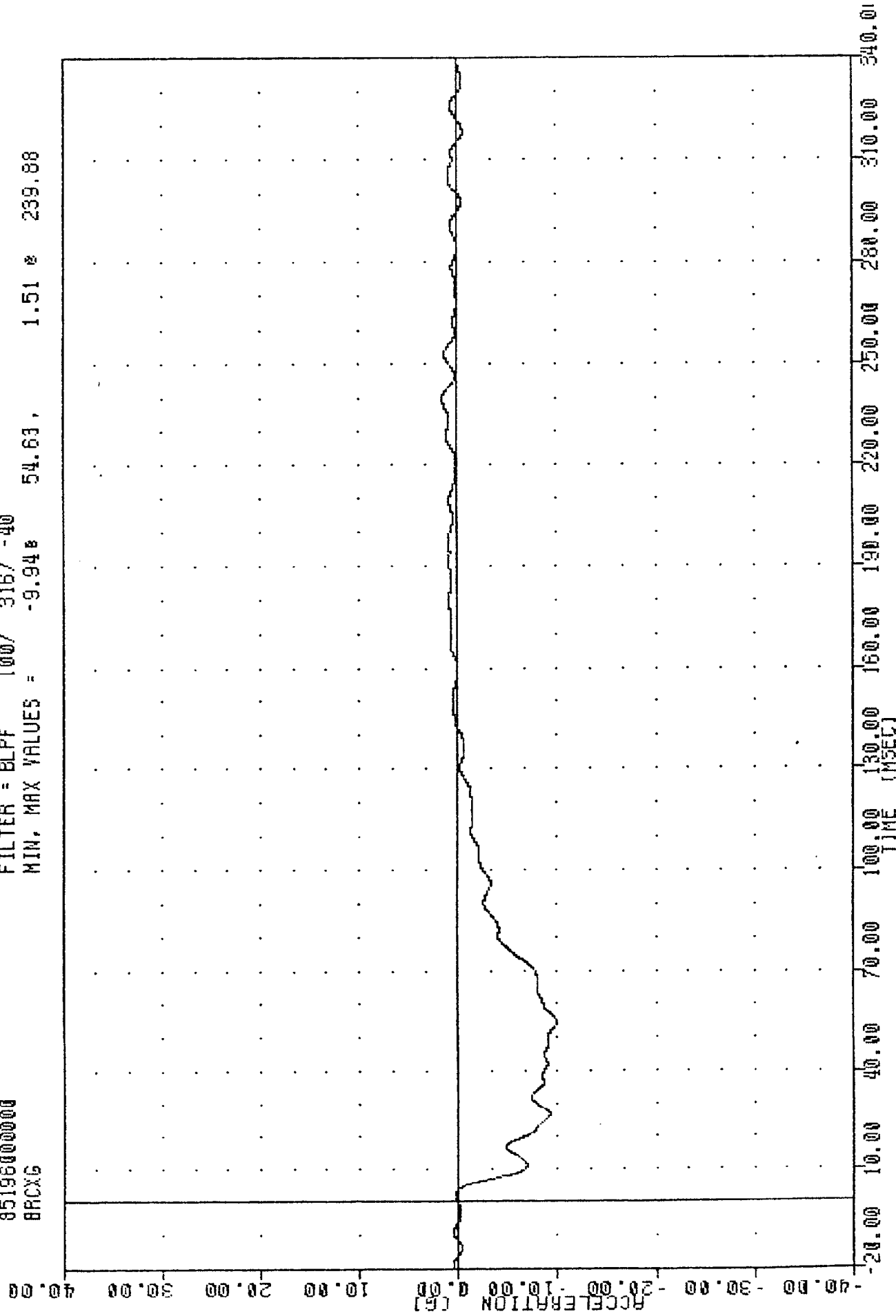
TIME (MSEC)

MVNA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 BARRIER CENTER OF GRAVITY VELOCITY Y AXIS

TRC , 850715
 NVMA SIDE IMPACT TESTING
 85198000000
 BRXG

PLOT DATE 23-JUL-85 14:42:25

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -9.948 54.63, 1.51 & 239.88

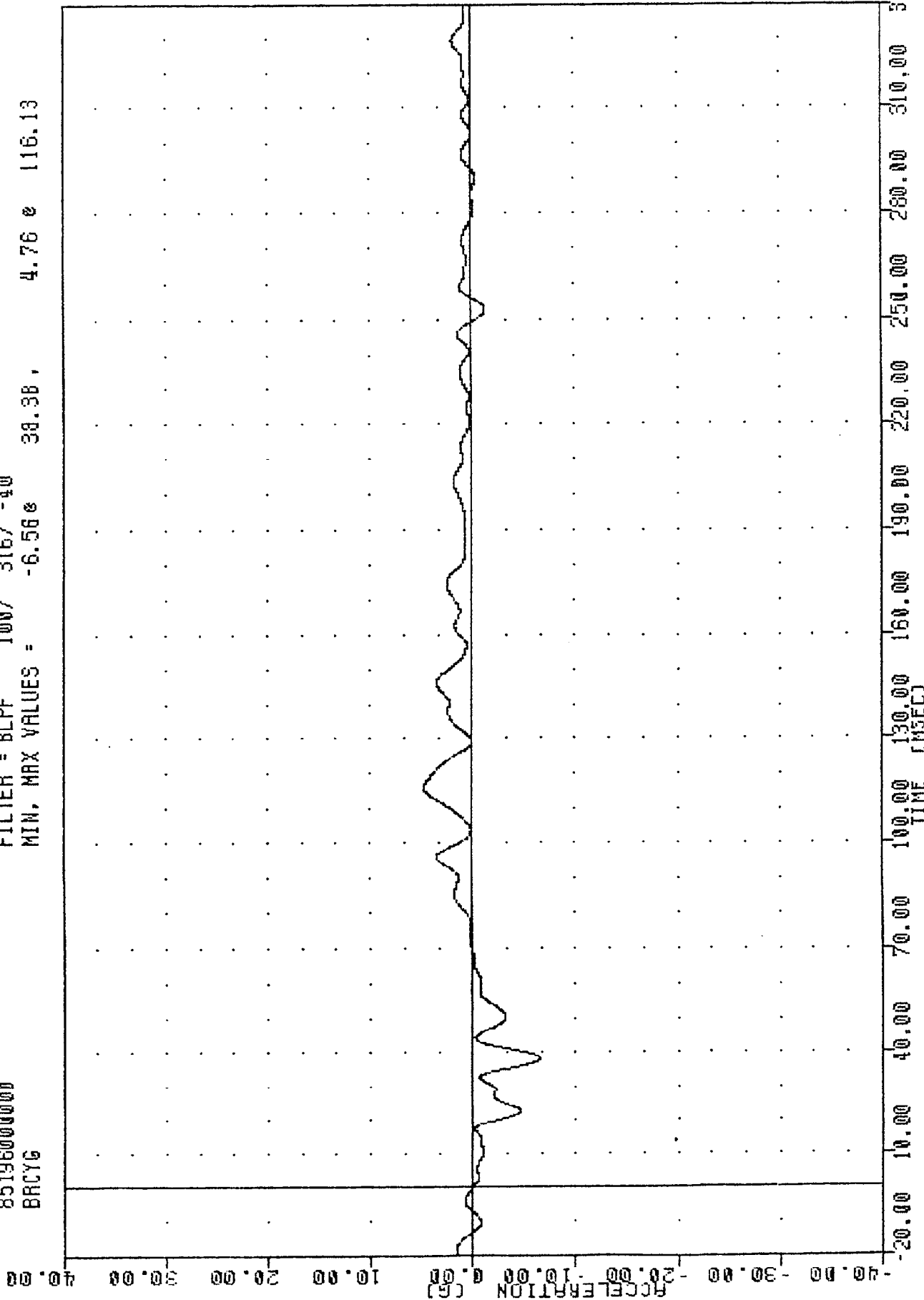


BASELINE STRUCTURE/PADDED/FAR SEATING
 MVMA SIDE IMPACT TEST --
 BARRIER REAR CROSSMEMBER ACCELERATION X AXIS

TRC , 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 BRCTG

PLOT DATE 23-JUL-85 14:42:25

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -6.56 39.38 , 4.76 116.13

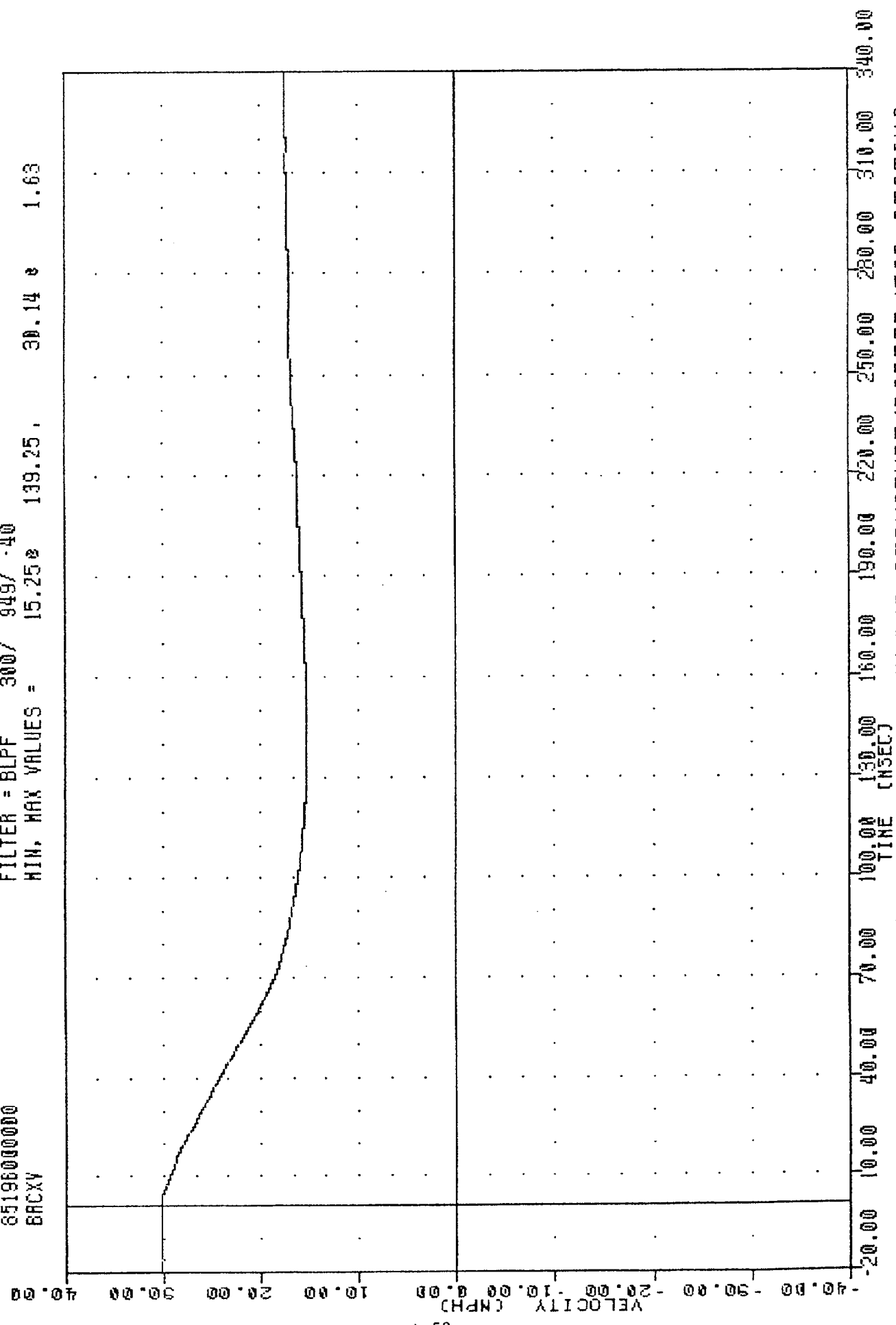


MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 BARRIER REAR CROSSMEMBER ACCELERATION Y AXIS

TAC 850715
 MVMA SIDE IMPACT TESTING
 85196000000
 6ACXV

PLOT DATE 23-JUL-85 15:04:44

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = 15.25 139.25, 30.14 1.63



A-58

MVMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
 BARRIER REAR CROSSMEMBER VELOCITY X AXIS

TRC 850715 PLOT DATE 23-JUL-85 15:04:44

NYMA SIDE IMPACT TESTING

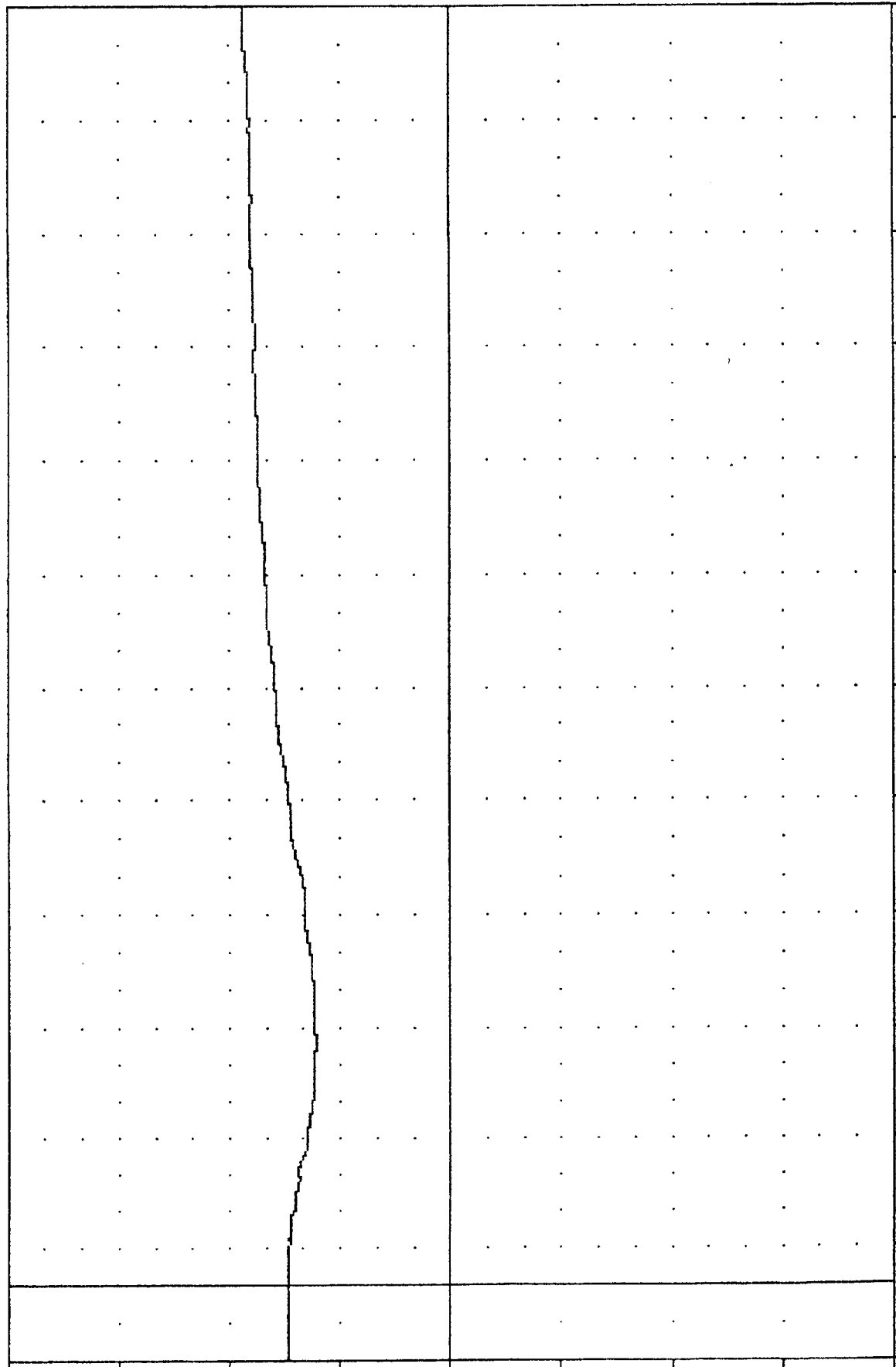
85196000000

BRCYV

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 12.23e 66.50, 18.82 e 340.00

VELOCITY (IN/CH)



TIME (MSEC)

NYMA SIDE IMPACT TEST -- BASELINE STRUCTURE/PADDED/FAR SEATING
BARRIER REAR CROSSMEMBER VELOCITY Y AXIS

APPENDIX B
DUMMY CERTIFICATION

SIDE IMPACT DUMMY CALIBRATION

SIDE IMPACT DUMMY CALIBRATION
DUMMY SERIAL NUMBER 119
CALIBRATION 04

TEST/ DATE	CHANNEL	FILTER CLASS	PEAK ACCELERATION (g)	
			SPECIFICATION*	TEST RESULT
HEAD 7/9/85	HEAD Y-AXIS	1000	150-175	163.21
THORAX 7/8/85	UPPER SPINE Y-AXIS			
	PRIMARY	180	16-24.6	24.79
	REDUNDANT	180	16-24.6	24.49
	LOWER SPINE Y-AXIS			
	PRIMARY	180	17.6-26.4	21.47
	REDUNDANT	180	17.6-26.4	21.75
	RIGHT UPPER RIB Y-AXIS			
	PRIMARY	180	36-50	46.51
	REDUNDANT	180	36-50	46.86
	RIGHT LOWER RIB Y-AXIS			
	PRIMARY	180	36-50	46.91
	REDUNDANT	180	36-50	47.91
PELVIS 7/8/85	PELVIS Y-AXIS	180	50-65	50.41

*Side impact test specifications currently in use by VRTC-NHTSA.

Side Impact Dummy Damage Checklist

Dummy S/N 119

OK	Damaged	
X		Outer skin on entire dummy (gashes, rips, etc.)
X		Head - Gashes, rips, general appearance, etc.
X		Neck - broken or cracks in rubber
X		Spine - broken or cracks in rubber
X		Ribs - check all ribs for damage (bent or broken), damping material separation.
X		Rib Attach Leather - breaks in leather at ribs
X		Bourns Pot. - bent shaft - electrical discontinuity
X		Accelerometer Leads - torn cables
X		Accelerometer Mountings (Head, Thorax, Pelvis) - check for secure mounting
X		Retrofit Kit (Calspan) - check for bent brackets, sagging rib cage
X		Thorax support wire and springs - check for damage
X		Overall smooth stroking of thorax left to right (no interference)
X		Other

If upon visual examination, damage is apparent in any of these areas, a VRTC representative is to be consulted for a decision on repair or replacement of parts.

Repair or Replacement Approved By:

Signature

Date _____

Comments on repair or replacement of parts:

Visual OK

8/1/85 check spine for loose weight - all ok.

TRC Personnel

Checked By :

Signature

Date _____

VRTC Personnel

Checked and Approved for Testing By:

Signature

Date

PART 572 CALIBRATION

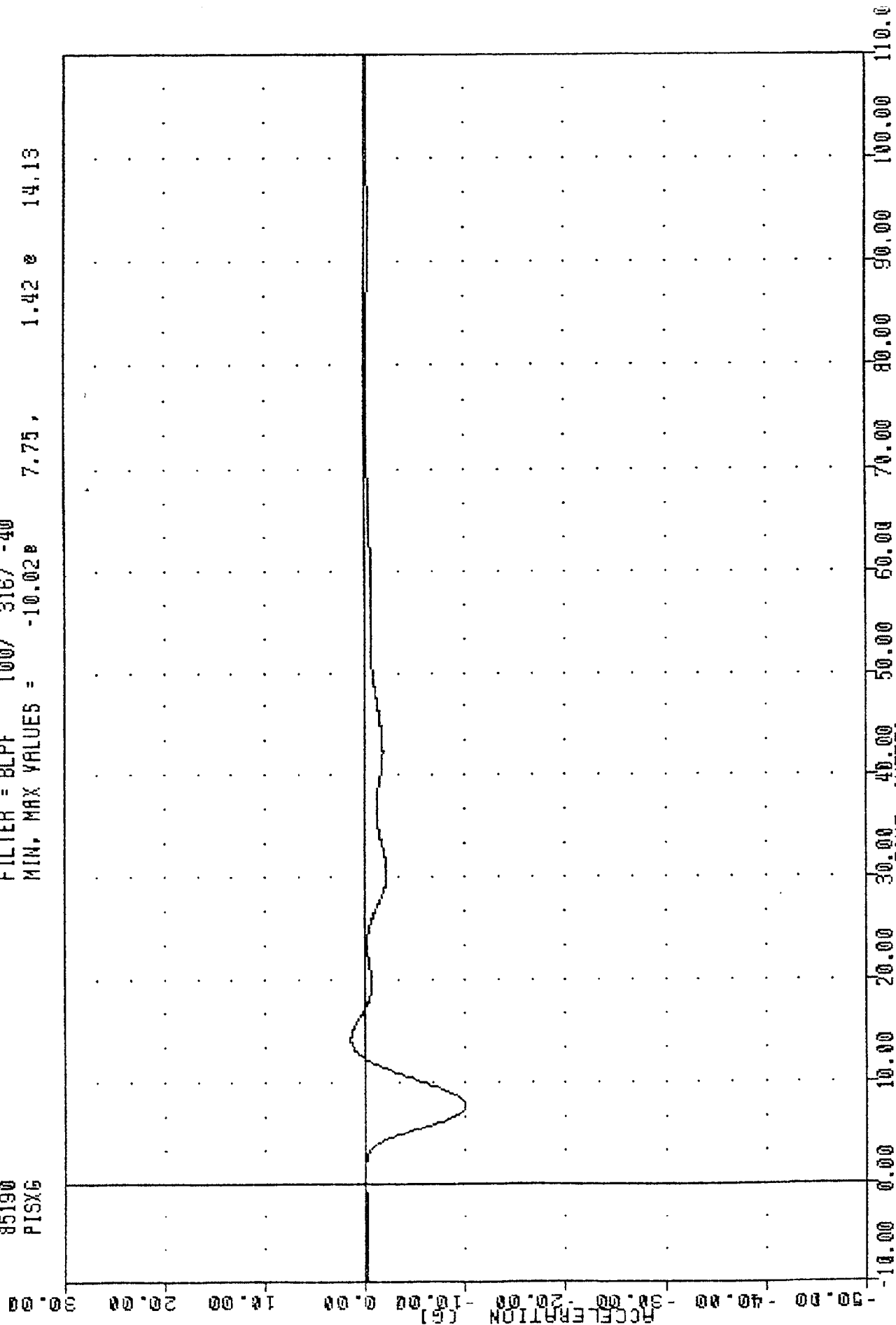
SH11904
SID 119 HEAD IMPACT CAL 04

85190
PISXG

PLOT DATE 9-JUL-85 12:42:16

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -10.028 7.75, 1.42 14.13

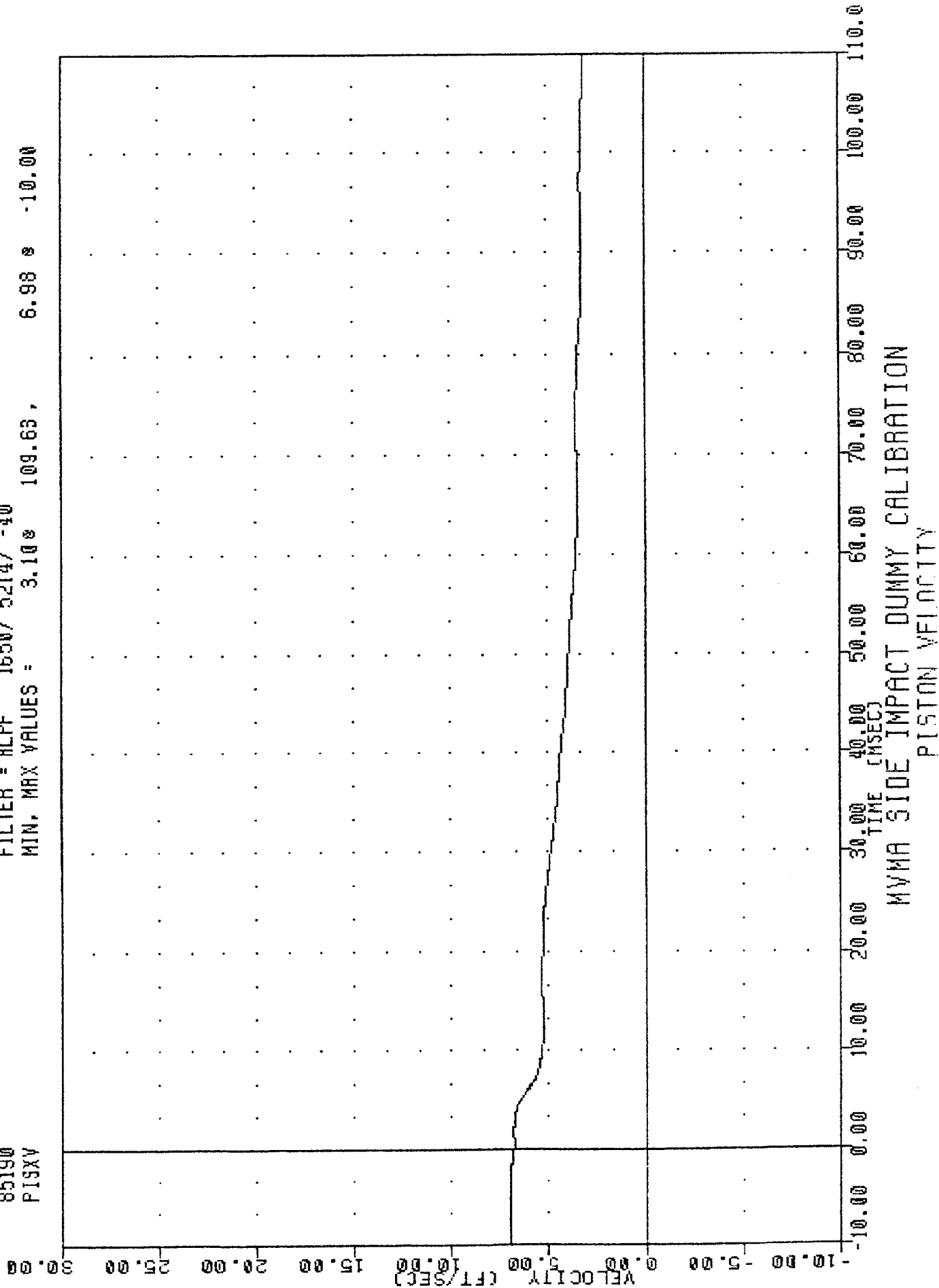


MVMA SIDE IMPACT DUMMY CALIBRATION
PISTON ACCELERATION

MVNA
 SID 119 HEAD IMPACT CAL 04
 85190
 PIXV

PLOT DATE 9-JUL-85 12:42:16

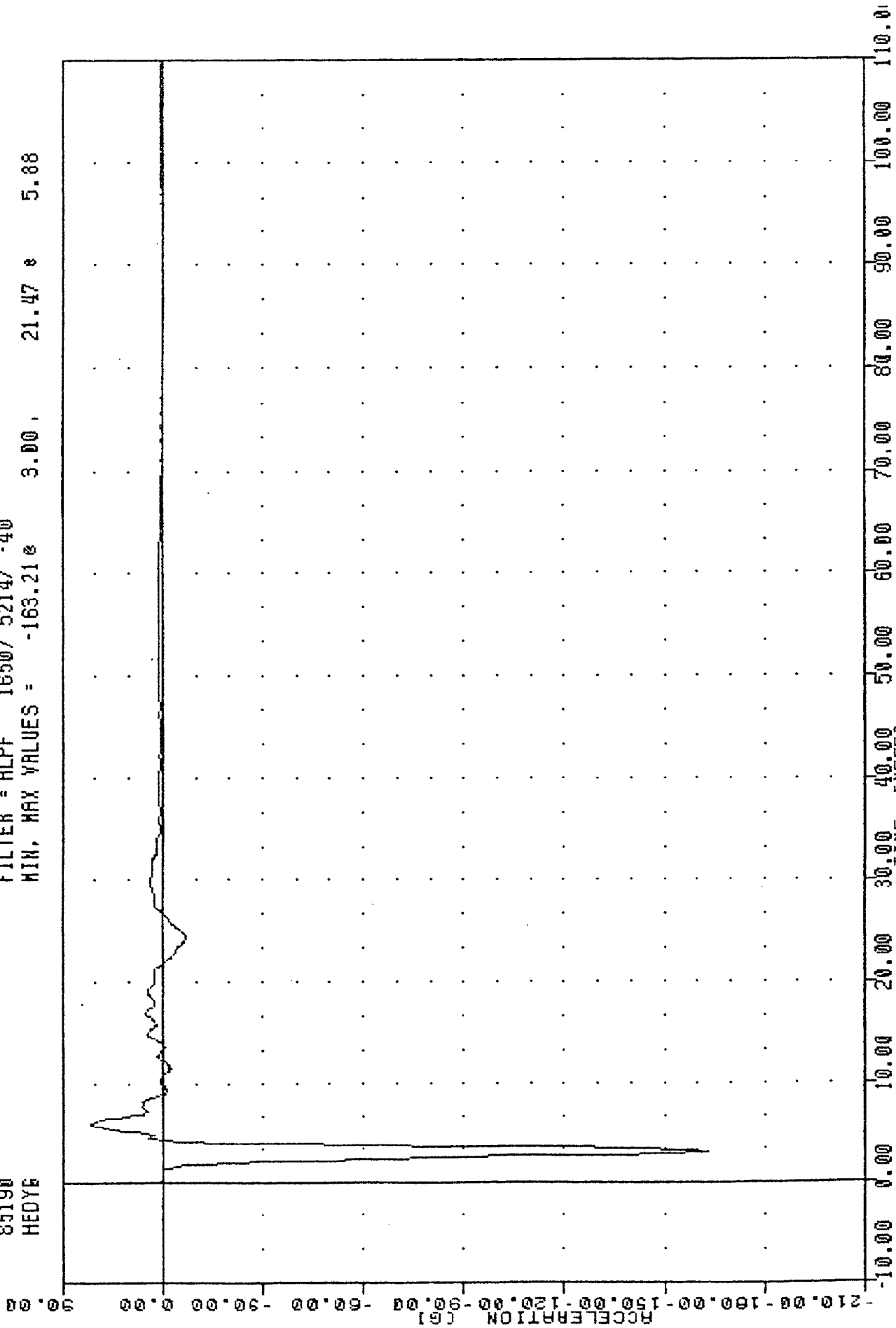
FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = 3.10 109.63, 6.98 -10.00



MYMA , SH11904
 SID 119 HEAD IMPACT CAL 04
 85190
 HEDYG

PLOT DATE 9-JUL-85 12:42:16

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -163.21 3.00 21.47 5.88

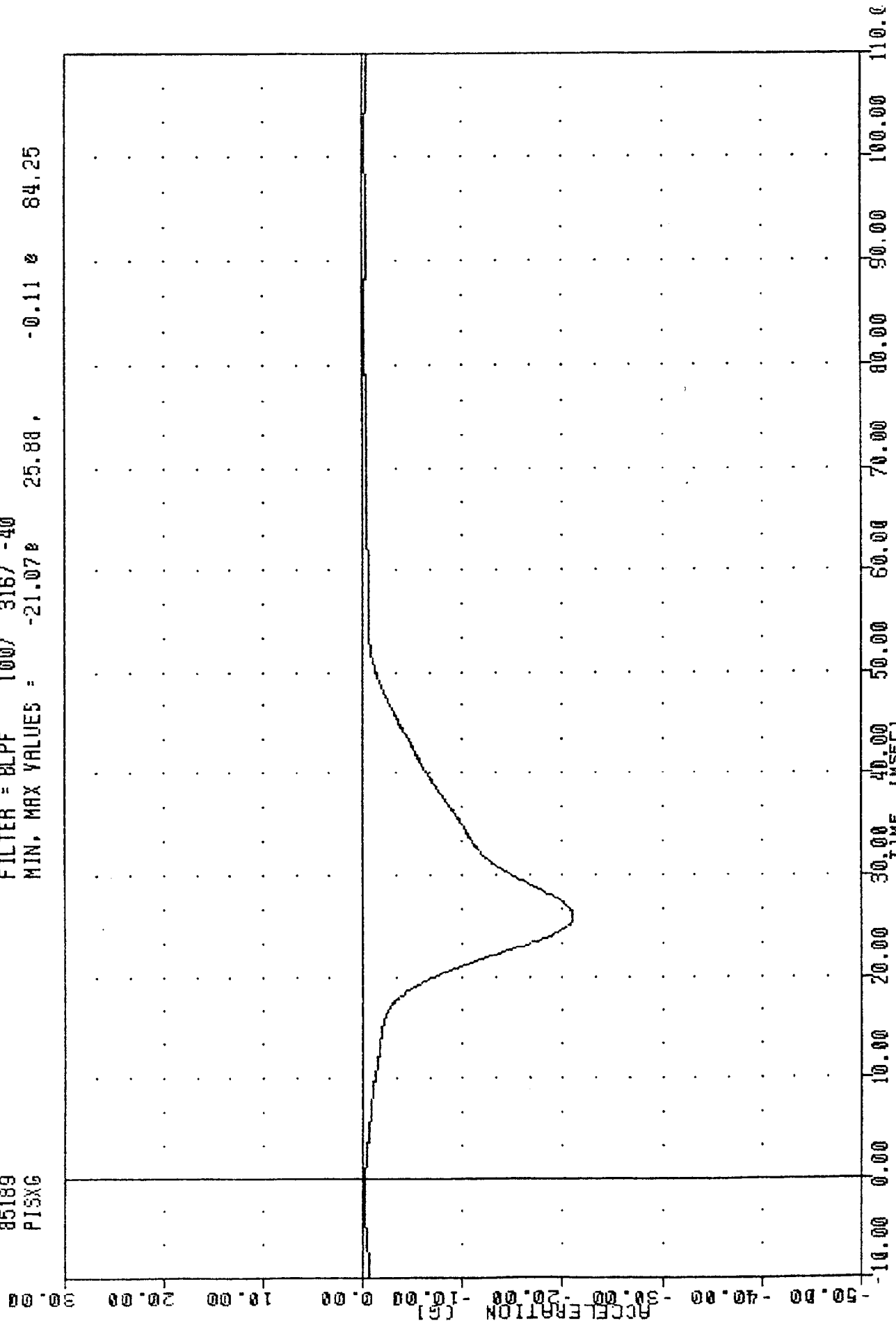


MYMA SIDE IMPACT DUMMY CALIBRATION
 HEAD ACCELERATION Y AXIS

MVMA , S111904
 SID 119 THORAX IMPACT CAL 04
 85189
 PISXG

PLOT DATE 8-JUL-85 13:48:31

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -21.07 25.88, -0.11 84.25

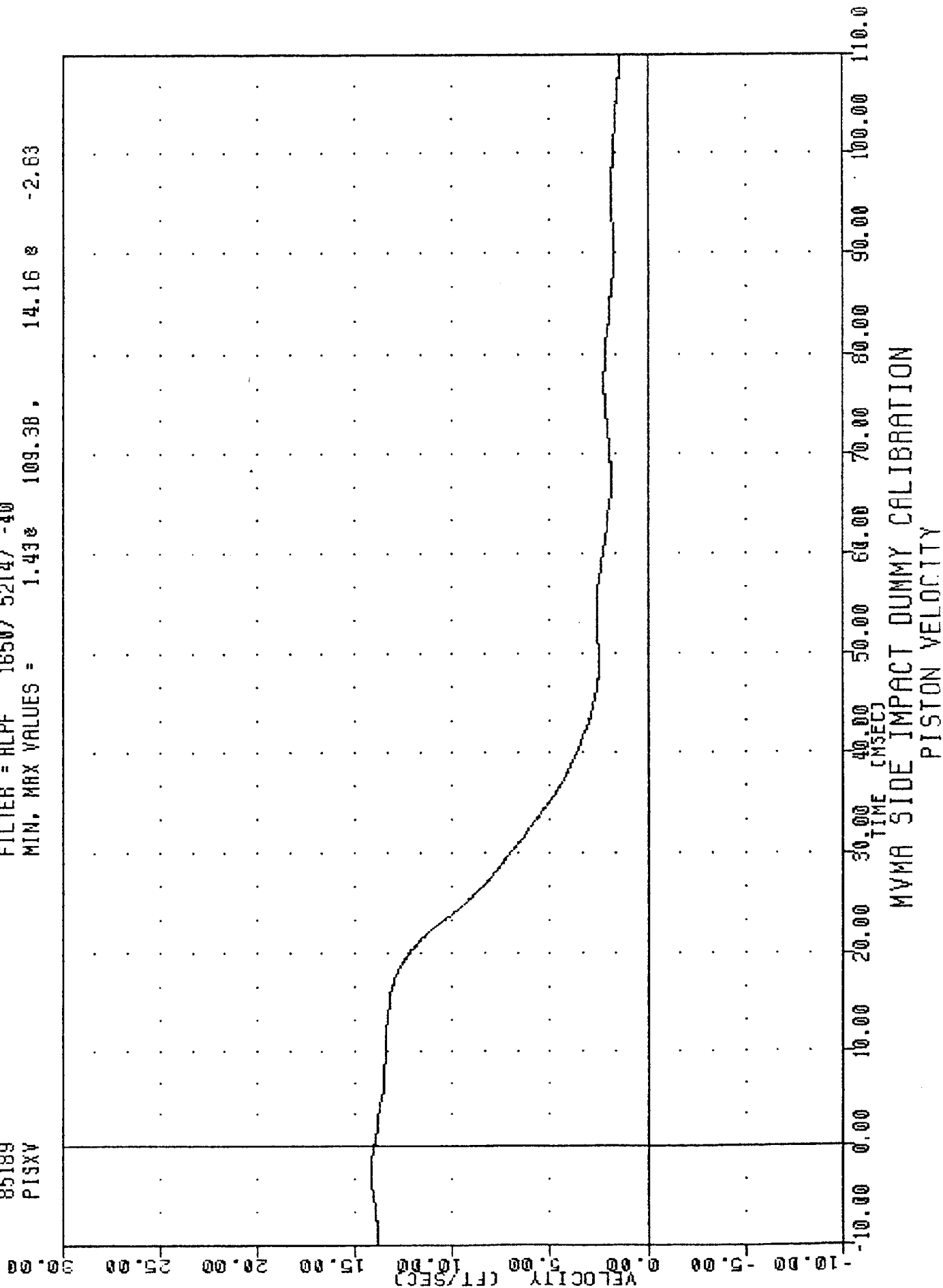


MVMA SIDE IMPACT DUMMY CALIBRATION
 PISTON ACCELERATION

MVNA
 SID 119 THORAX IMPACT CAL 04
 85189
 PISXV

PLOT DATE 8-JUL-85 13:48:31

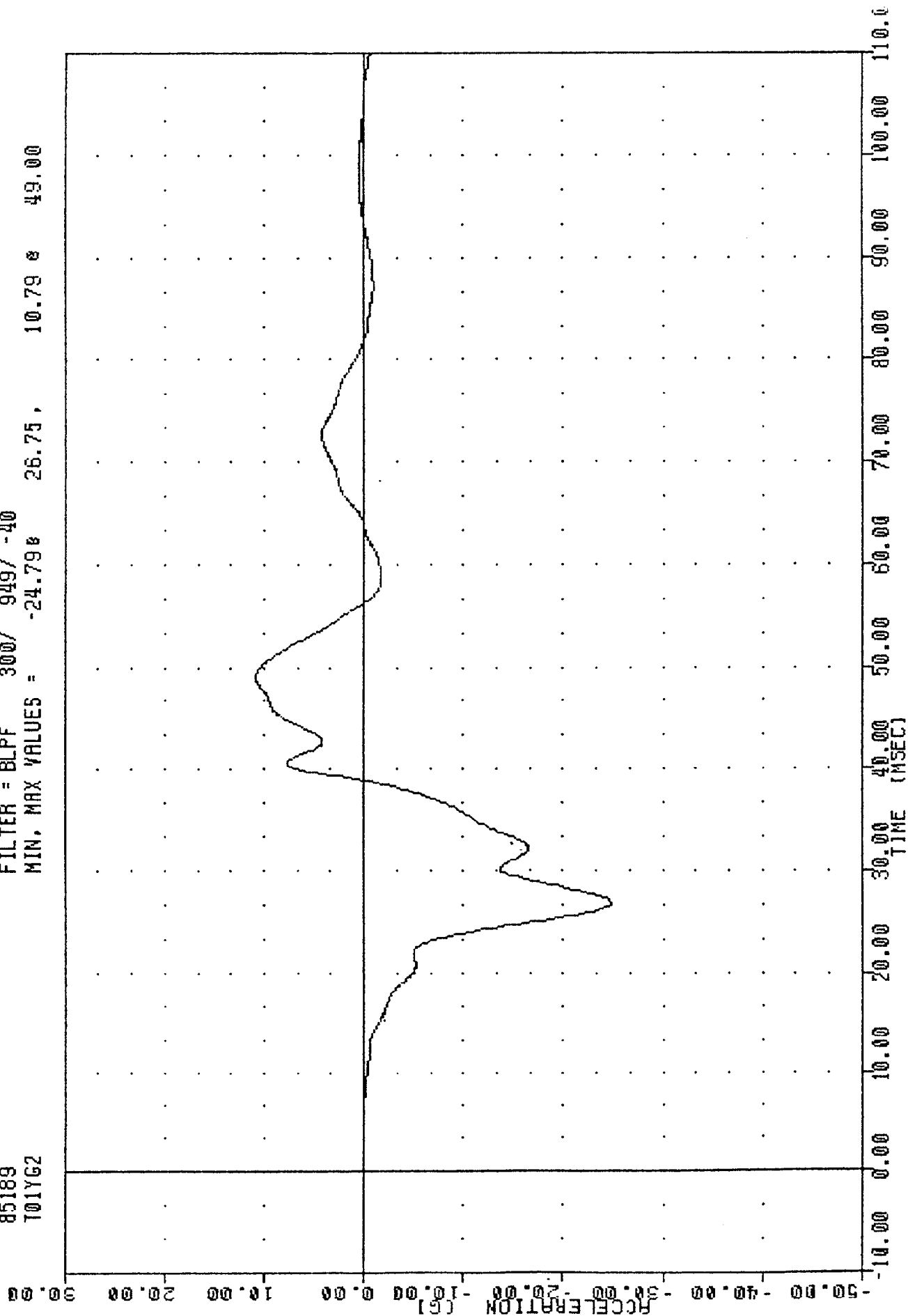
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = 1.43e 109.38. 14.16 e -2.63



NVMA
SID 118 THORAX IMPACT CAL 04
85189
T01Y62

PLOT DATE 8-JUL-85 13:48:31

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -24.79e 26.75, 10.79 e 49.00

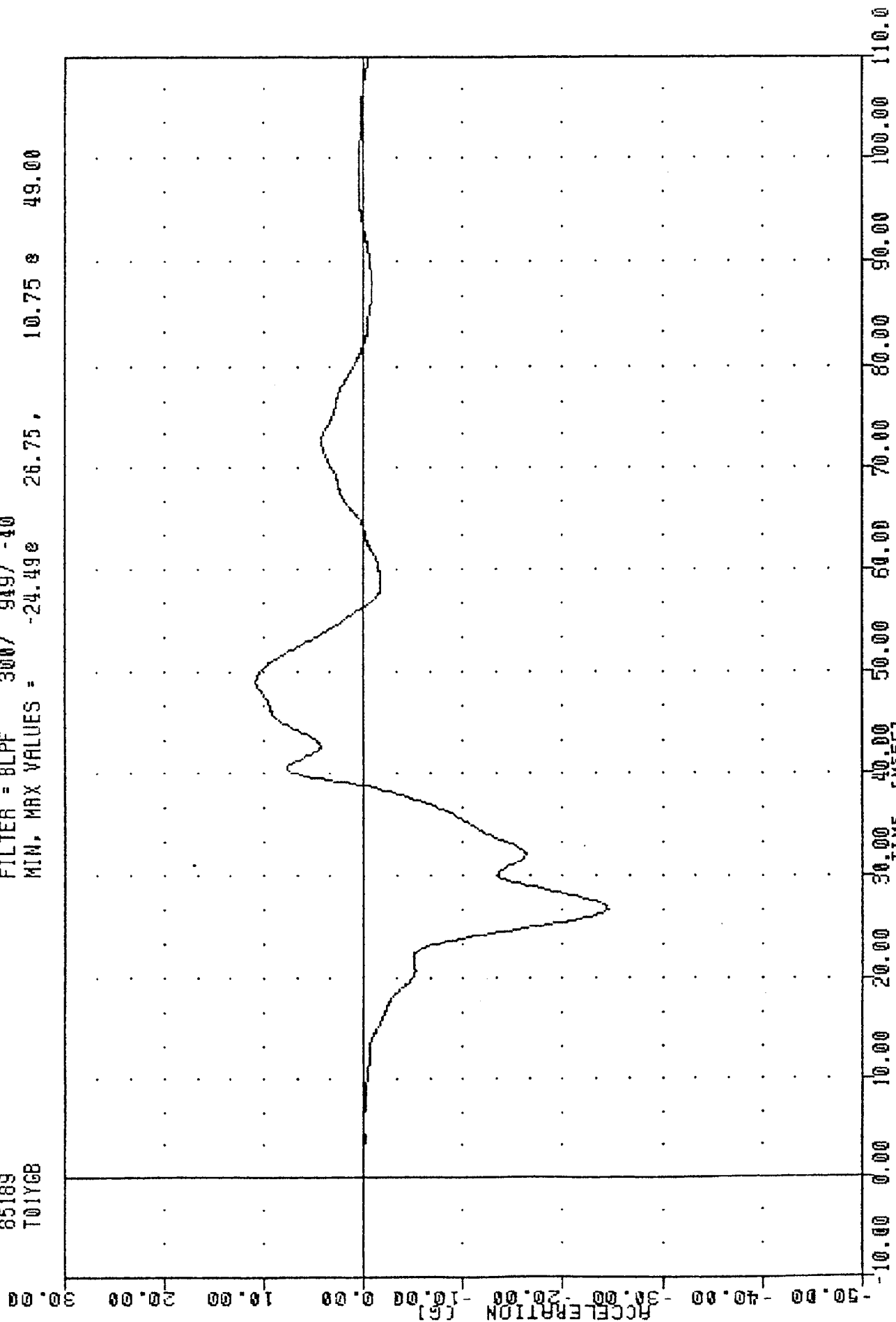


MYNA , ST11904
SID 119 THORAX IMPACT CAL 04
85189
T01YGB

PLOT DATE 8-JUL-85 13:48:31

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -24.49e 26.75, 10.75 e 49.00



MYMA SIDE IMPACT DUMMY CALIBRATION
UPPER SPINE ACCELERATION Y AXIS -REPLINANT

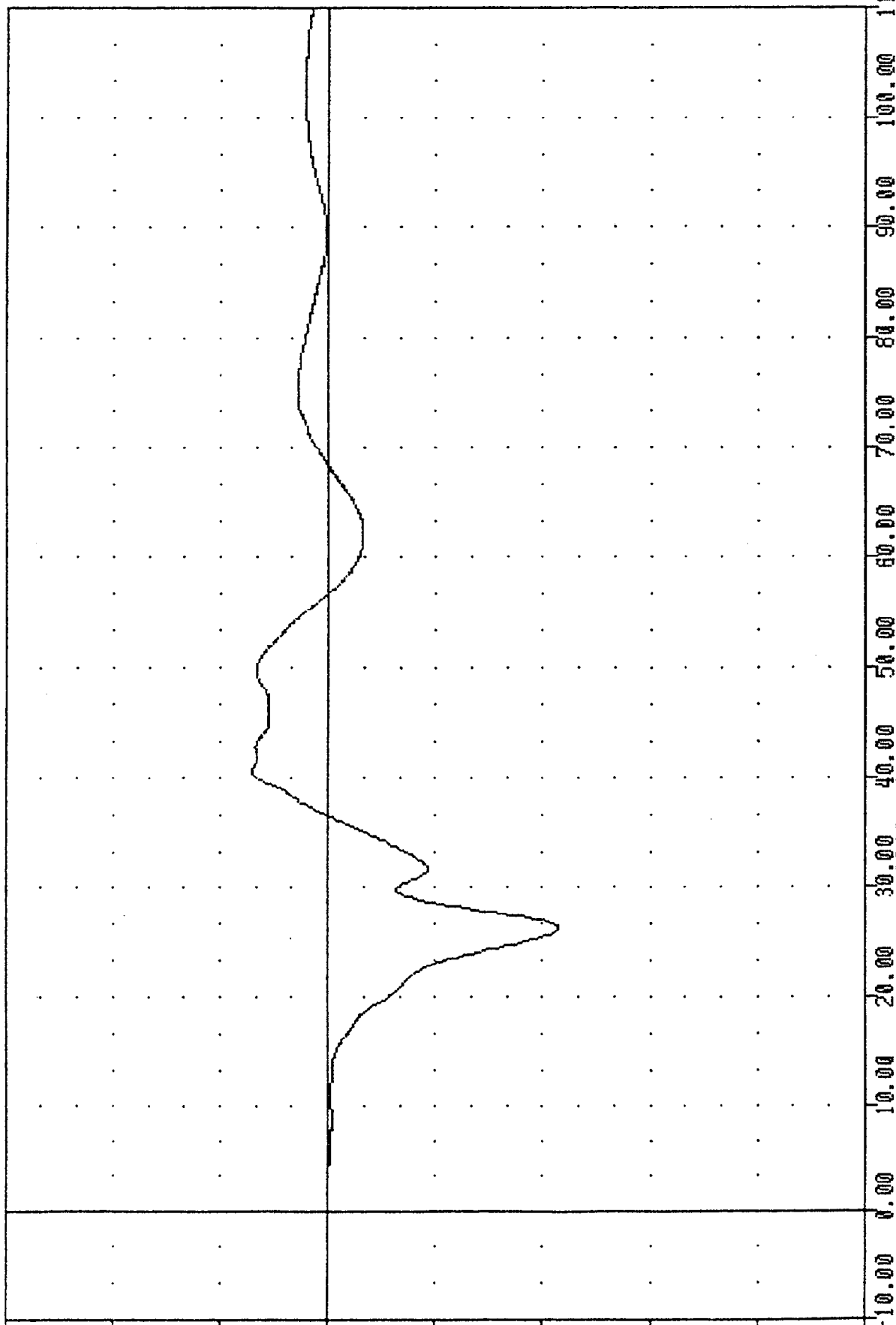
MYMA , ST11904
SID 119 THORAX IMPACT CAL 04
85189
T12Y62

PLOT DATE 8-JUL-85 13:48:31

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -21.47e 26.25, 7.04 e 40.50

ACCELERATION (G)

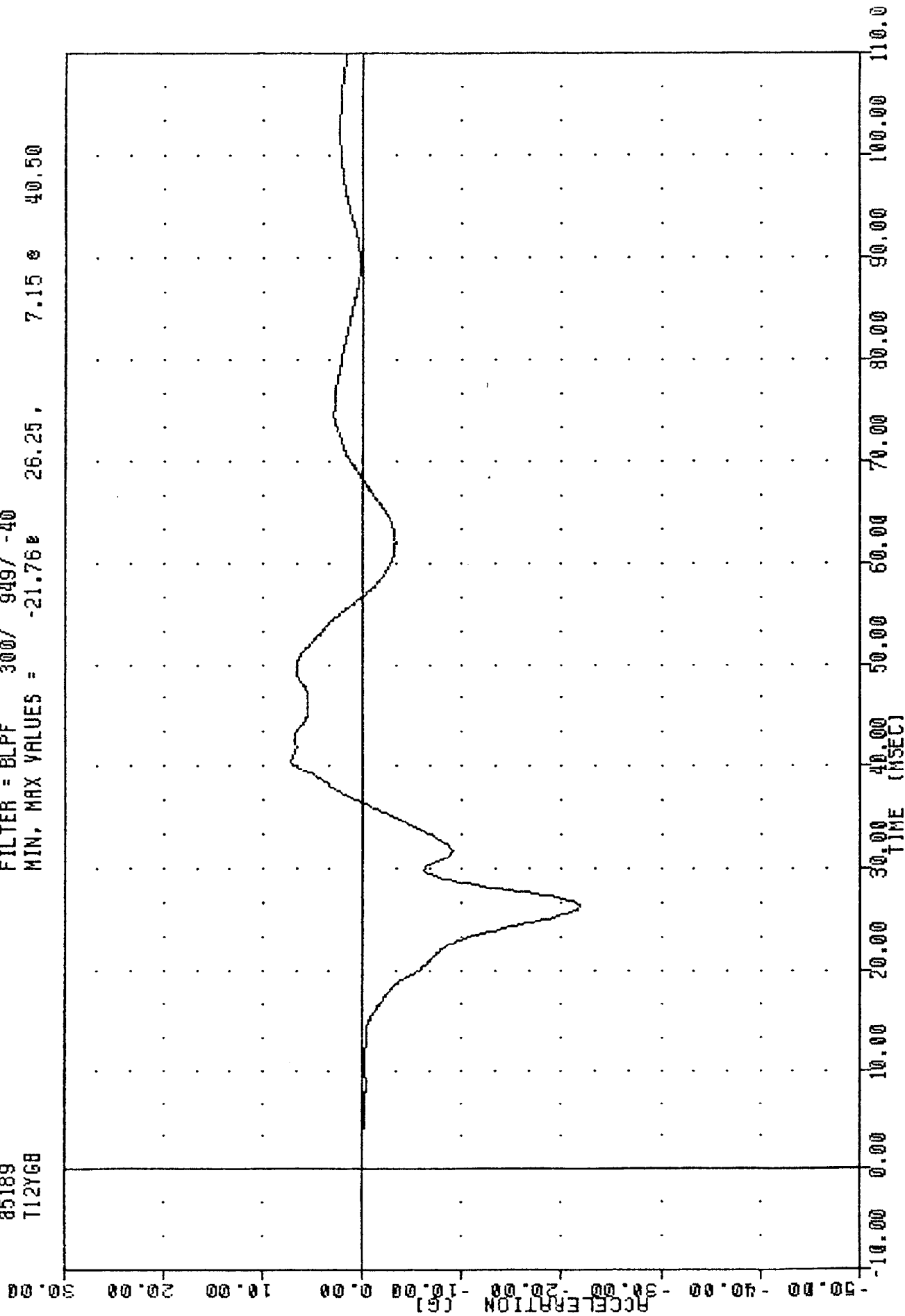


MYMA SIDE IMPACT DUMMY CALIBRATION
LOWER SPINE ACCELERATION Y AXIS -PRIMARY

NVMA
 SID 119 THORAX IMPACT CAL 04
 85189
 T12YGB

PLOT DATE 8-JUL-85 13:48:31

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -21.76 26.25, 7.15 40.50



MVMA SIDE IMPACT DUMMY CALIBRATION
 LOWER SPINE ACCELERATION Y AXIS -REDUNDANT

PLOT DATE 8-JUL-85 13:48:31

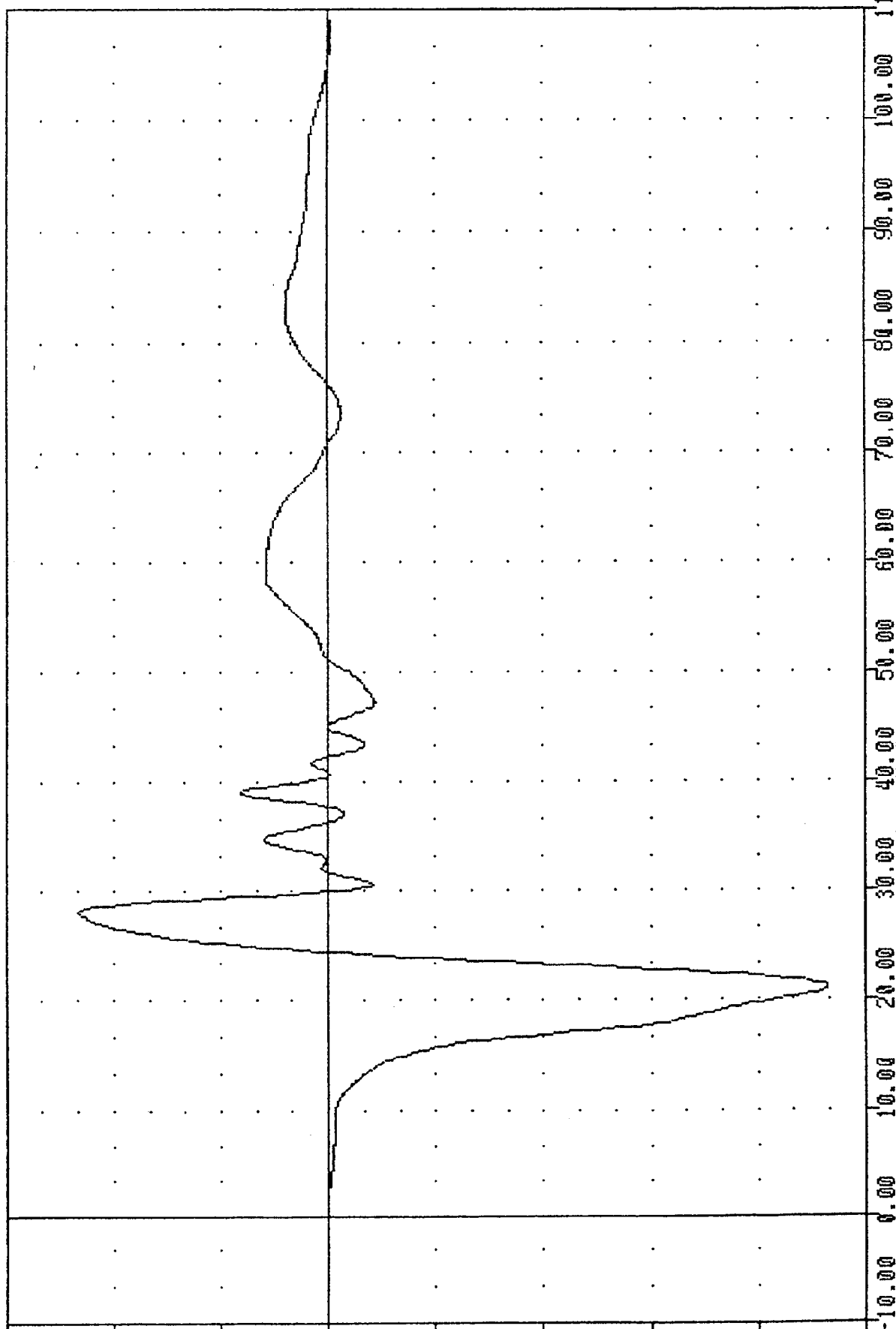
MYMA, ST11904
SID 119 THORAX IMPACT CAL 04

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -46.51 21.13 23.25 28.13

85189
RURY62

ACCELERATION (G)



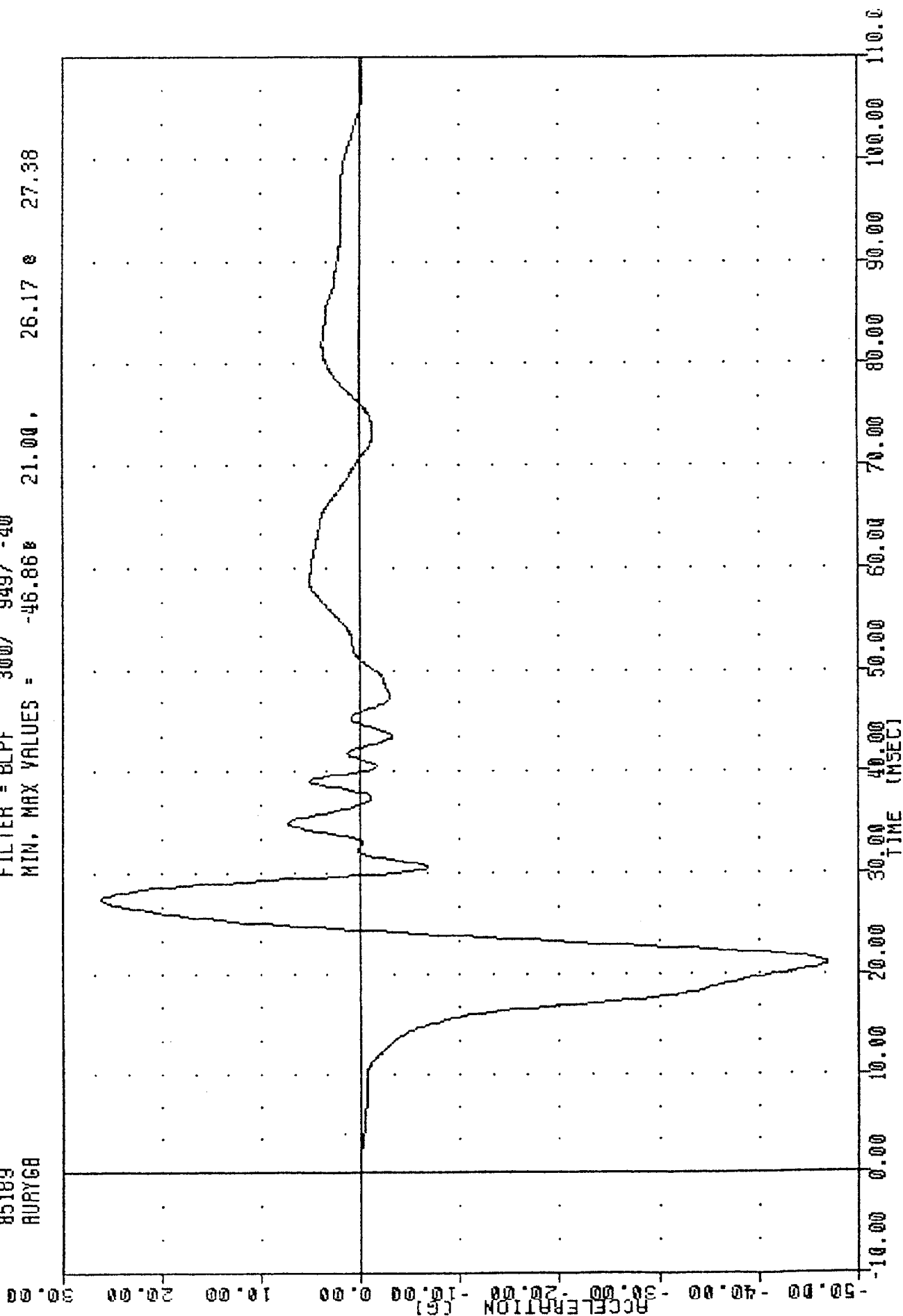
MYMA SIDE IMPACT DUMMY CALIBRATION
RIGHT UPPER RIB ACCELERATION Y AXIS -PRIMARY

NVMA , ST11904
SID 119 THORAX IMPACT CAL 04
85189
RURYGB

PLOT DATE 8-JUL-85 13:48:31

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -46.86 21.00, 26.17 27.38

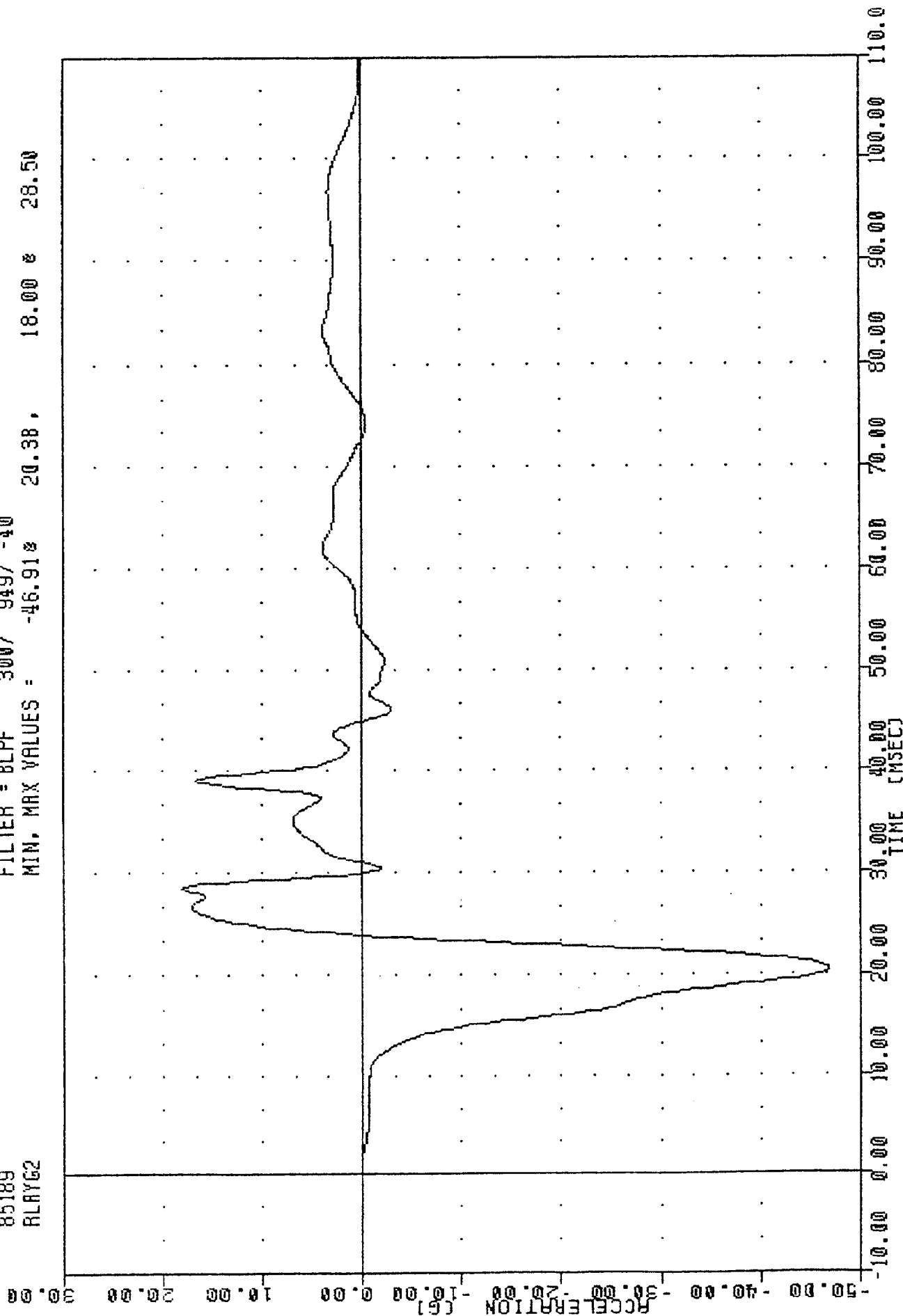


MVMA SIDE IMPACT DUMMY CALIBRATION
RIGHT UPPER RIB ACCELERATION Y AXIS -REDUNDANT

ST11904
SID 119 THORAX IMPACT CAL 04
85189
RLAYG2

PLOT DATE 8-JUL-85 13:48:31

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -46.91% 20.38, 18.00 & 28.50



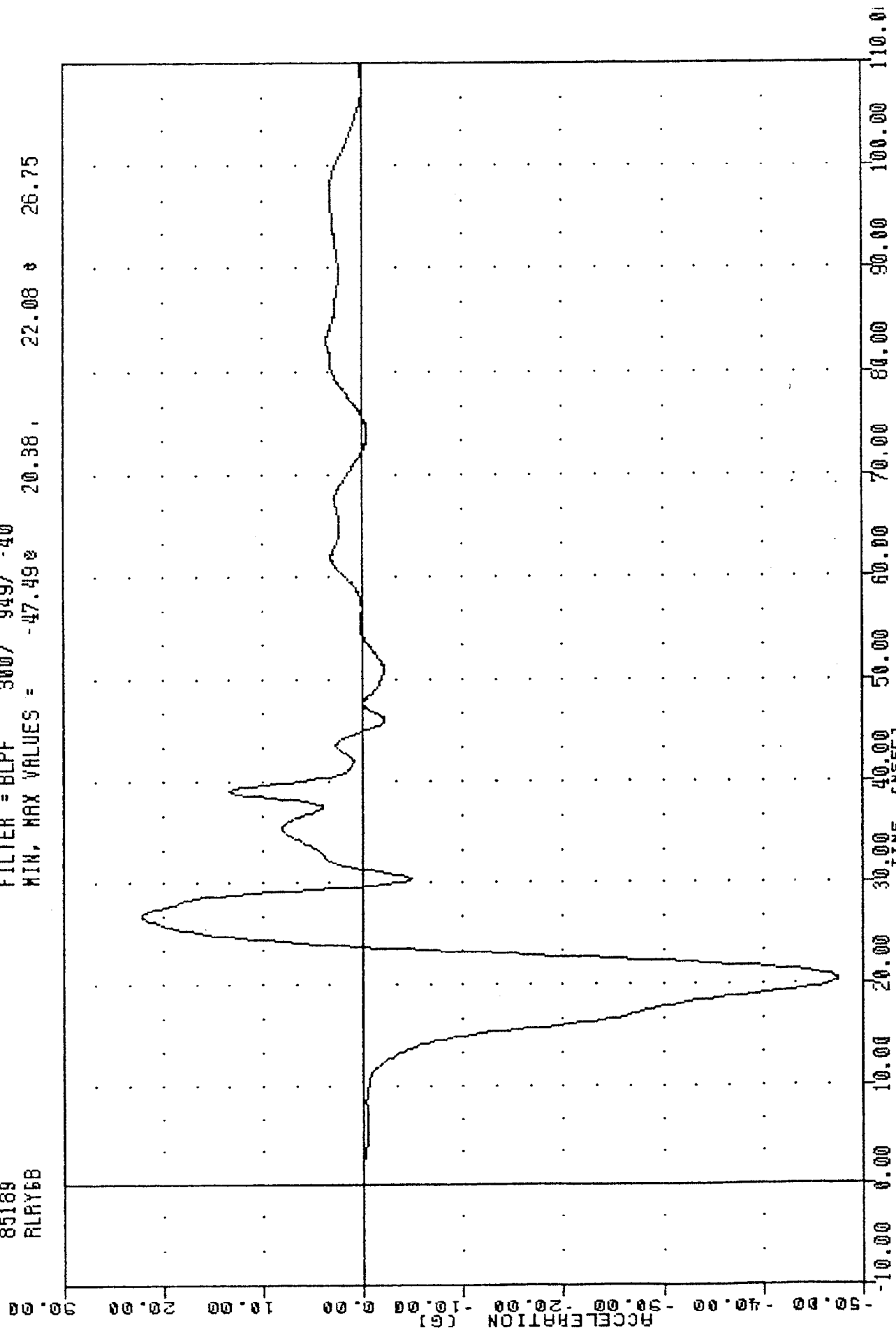
MVMA SIDE IMPACT DUMMY CALIBRATION
RIGHT LOWER RIB ACCELERATION Y AXIS -PRIMARY

MVMA , ST11904
 SID 119 THORAX IMPACT CAL 04
 85189
 RLRV6B

PLOT DATE 8-JUL-85 13:48:31

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -47.49 20.38 22.08 26.75

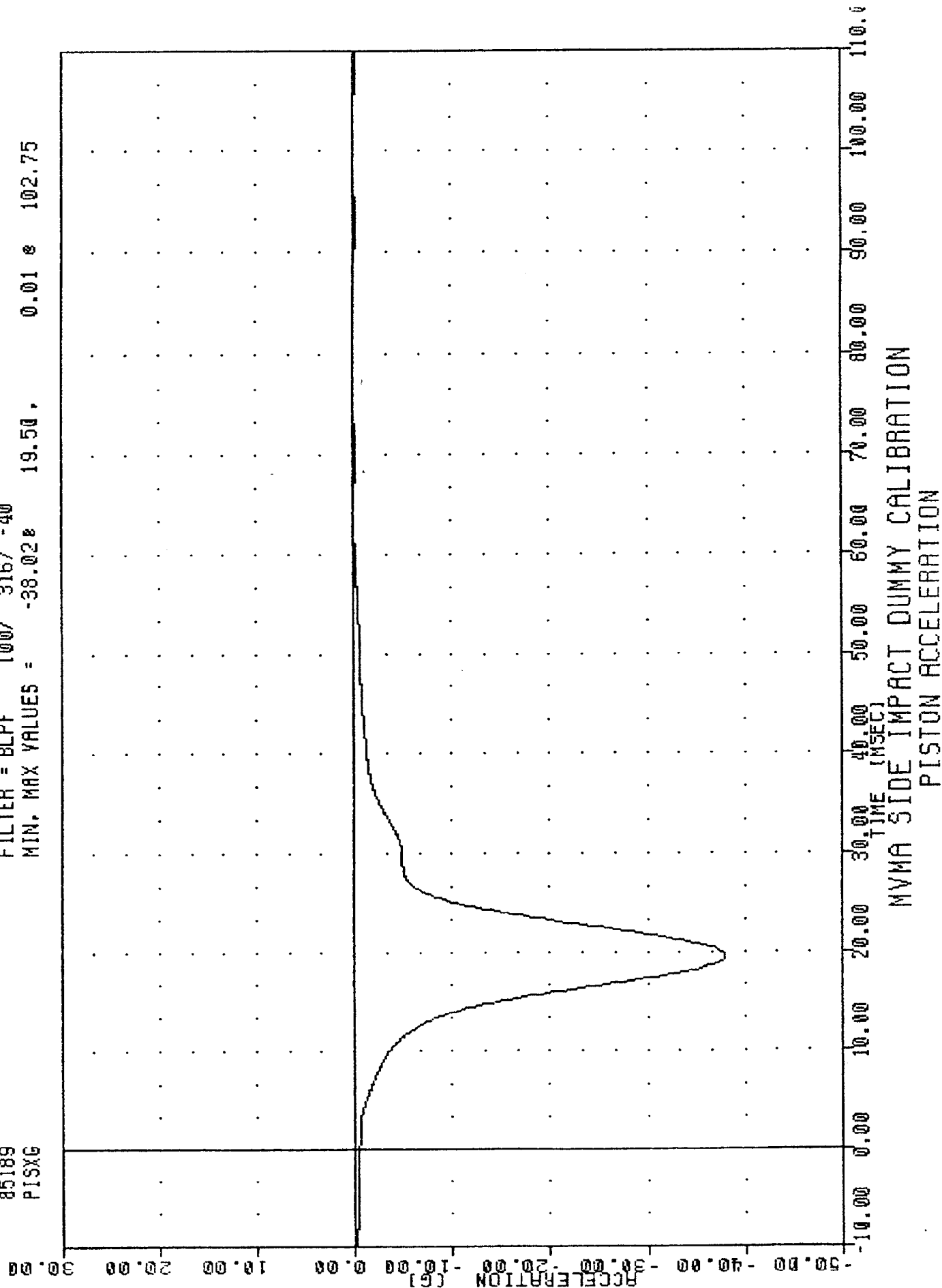


MVMA SIDE IMPACT DUMMY CALIBRATION
 RIGHT LOWER RIB ACCELERATION Y AXIS - ABUNDANT

NVMA
SID 119 PELVIC IMPACT CAL 04
85189
PISXC

PLOT DATE 8-JUL-85 12:41:45

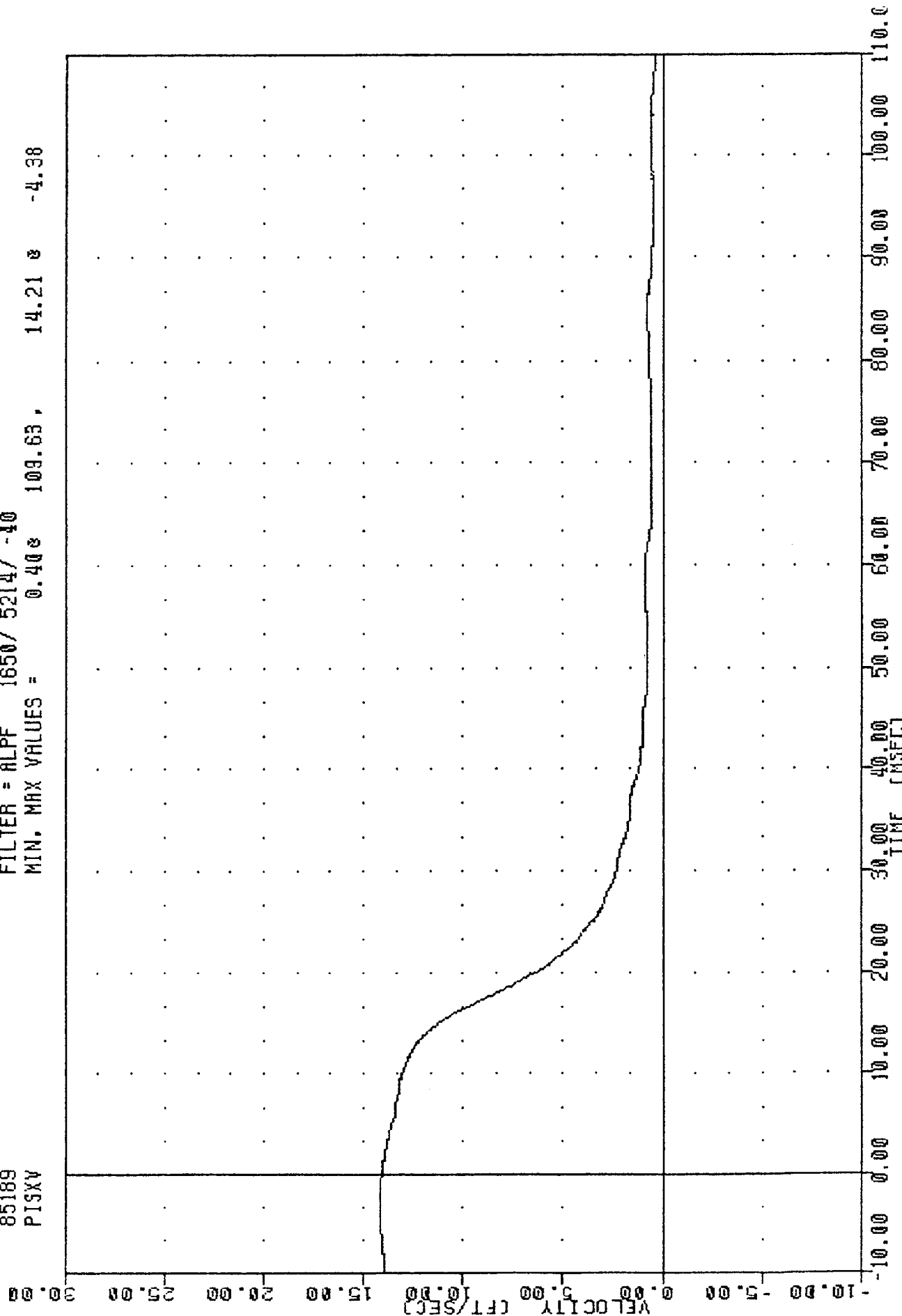
FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -38.02 19.50, 0.01 102.75



MVNA
 SID 119 PELVIC IMPACT CAL 04
 85189
 PISKY

PLOT DATE 8-JUL-85 12:41:45

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = 0.408 109.63, 14.21 8 -4.38

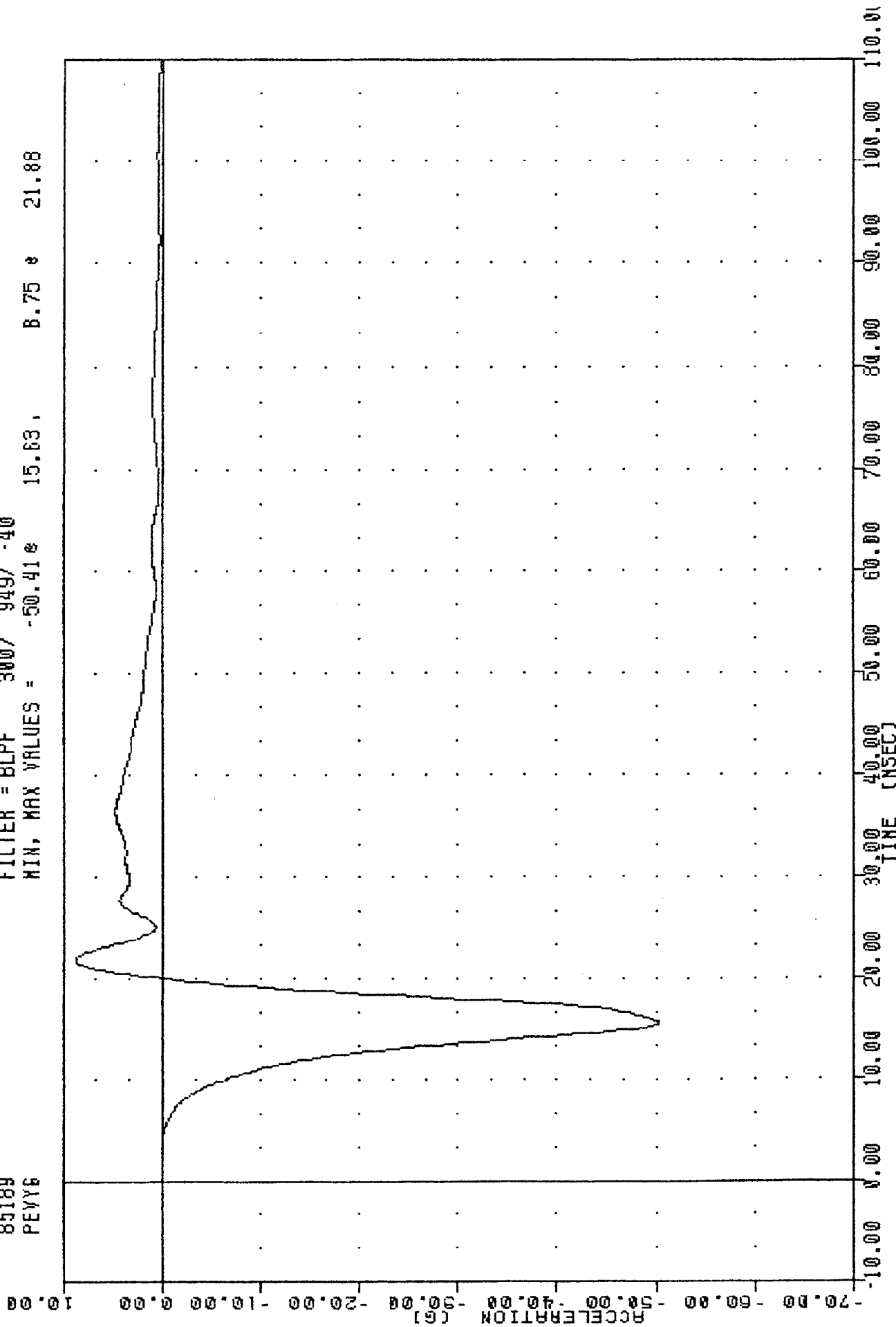


MVMA SIDE IMPACT DUMMY CALIBRATION
 PISTON VELOCITY

MYMA
SID 119 PELVIC IMPACT CAL 04
85189
PEVY6

PLOT DATE 8-JUL-85 12:41:45

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -50.418 15.63, 8.75 & 21.88



MVMA SIDE IMPACT DUMMY CALIBRATION
PELVIS ACCELERATION Y AXIS